

**WEDNESDAY**

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**9:30 – 11:00 – Opening**

9:30 – 10:15 – Welcome

10:15 – 11:00 – Opening presentation

Horizon 2020 opportunities for Spanish Researchers – Luisa Revilla, CDTI

**11:00 – 11:30 – Coffee-break**

**11:30 – 13:30 – Session 1**

**1.1 - Energy efficiency in buildings and industry (Room: 0.15)**

Chair: Eduard Oró, IREC

Plenary presentation (V288) - Are we able to take advantage of envelope dynamics for improving building thermal-energy efficiency and urban?

*Anna Laura Pisello*

*Università degli studi di Perugia (Italy)*

P206 - Potential of a solar energy system for heating and domestic hot water supply by means of a photovoltaic ventilated façade

*Koldobika Martin, Iván Flores, Gonzalo Diarce, Álvaro Campos, Ane Miren García, Carlos García*

*Universidad del País Vasco (Spain)*

I132 - Radiant wall cooling potential and effect on radiant asymmetry

*Joaquim Romaní, Alvaro de Gracia, Luisa F. Cabeza, Gabriel Pérez*

*Universitat de Lleida (Spain), Universitat Rovira i Virgili (Spain)*

F106 - Assessment of the performance of a cooling panel integrated in buildings: experimental study and model validation

*Amaia Zuazua-Ros, Juan Carlos Ramos, César Martín-Gómez, Tomás Gómez-Acebo*

*Universidad de Navarra (Spain)*

X116 - Concrete core slab with PCM as a thermal energy storage and supply system

*Lidia Navarro, Alvaro de Gracia, Luisa F. Cabeza*

*Universitat de Lleida (Spain), Universitat Rovira i Virgili (Spain)*

D170 - Experimental study comparing concrete and gravel for the evaluation of heat transfer in Thermally Activated Building Systems (TABS)

*Eloy Velasco, Manuel Andrés, Fco. Javier Rey, Ana Tejero*

*Universidad de Valladolid (Spain)*

**1.2 – Modelling and numerical simulation (Room: 0.17)**

Chair: Alvaro de Gracia, Universitat Rovira i Virgili

Plenary presentation (B157) - How to include environmental aspects in the design of thermal systems?

*Alba Torres, Joan Carreras, Alvaro de Gracia, Luisa F. Cabeza, Gonzalo Guillén-Gosálbez, Laureano Jiménez, Dieter Boer*

*Universitat Rovira i Virgili (Spain), Universitat de Lleida (Spain), Imperial College of Science (United Kingdom)*

J211 - Ejector geometry optimisation by means of a Multi-Objective Evolutionary Algorithm and CFD analysis

*José Antonio Expósito Carrillo, Francisco José Sánchez de La Flor, José Manuel Salmerón Lissén*

*Universidad de Cádiz (Spain), Universidad de Sevilla (Spain)*

V141 - Comparison of the thermal performance of packed and fluidized bed storage containing a PCM for low temperature solar air heating applications

*Juan F. Belmonte, Juan I. Córcoles, José D. Moya, Antonio E. Molina and José A. Almendros-Ibáñez*

*Renewable Energy Research Institute (Spain), Universidad de Castilla-La Mancha*

O105 - Multi-objective optimization approach for a passive house with seasonal solar energy store

*Victor Tulus, Shane Colclough, Philip Griffiths, Joshua Clarke, James T. McLeskey Jr., Laureano Jimenez, Dieter Boer*

*Universitat Rovira i Virgili (Spain), Ulster University (United Kingdom), Virginia Commonwealth University (United States of America), Randolph-Macon College (United States of America)*

O280 - Simulación de un sistema de suelo radiante con PCM

*Javier Mazo, Mónica Delgado, Ana Lázaro, Conchita Peñalosa, José María Marín, Belén Zalba*

*Universidad de Zaragoza (Spain)*

D255 - Método para la caracterización de las fugas de aire en sistemas de tratamiento de aire

*Francisco Barceló Ruescas, José González Maciá*

*Universitat Politècnica de Valencia (Spain)*

### **1.3 – Renewable energies (Room: 0.16)**

Chair: Camila Barreneche, Universidad de Barcelona

Plenary presentation (K222) - Influence of flux distribution on parabolic troughs performance

*David Rodriguez-Sanchez, Antonio Molina Navarro, Jose A. Almendros Ibañez, Gary Rosengarten*

*RMIT University (Australia), Renewable Energy Research Institute (Spain), Universidad de Castilla-La Mancha (Spain)*

I257 - A new Variable Curvature concept for Linear Fresnel Reflectors Solar Concentrating Systems

*Jose M. Sojo-Gordillo, Antonio Carrillo-Andrés, Samuel Guarino-Molina, Eduardo A. Rodríguez-García*

*Universidad de Málaga (Spain)*

R128 - Creep-fatigue life of Incoloy 800H in solar tubular receivers

*M. Reyes Rodríguez-Sánchez, Marta Laporte, Domingo Santana*

*Universidad Carlos III de Madrid (Spain)*

J152 - Optical and thermal characterization of colored sand for Concentrated Solar Power applications

*Alexandra Gimeno-Furió, Leonor Hernandez, Raúl Martínez-Cuenca, Luis Cabedo, Camila Barreneche, J. Enrique Juliá, Luisa F. Cabeza*

*Universitat Jaume I (Spain), Universitat de Barcelona (Spain), Universitat de Lleida (Spain)*

C143 - Evaporator optimization for solar tower power plants

*Pedro Ángel González-Gómez, Jesús Gómez-Hernández, Javier Villa Briongos, Domingo Santana*

*Universidad Carlos III de Madrid (Spain)*

F192 - Optimizing the configuration of concentrating solar power plants to reduce thermal energy cost

*Luis F. González-Portillo, Javier Muñoz-Antón, José M. Martínez-Val  
Universidad Politécnica de Madrid (Spain)*

**13:30 – 15:00 – Lunch**

**15:00 – 16:00 – Poster session**

Chair: A. Inés Fernández, Universidad de Barcelona

Z181 - The importance of the energy simulation in residential buildings refurbishment. A case study for a residential building in Burgos

*Raúl Briones Llorente, Eduardo Montero García  
Universidad de Burgos (Spain)*

P112 - Material research, design and testing of structural elements made of laminated glass

*Xavier Centelles, Marc Martin, Aran Solé, J. Ramon Castro, Luisa F. Cabeza  
Universitat de Lleida (Spain), Universitat Jaume I (Spain)*

A113 - Thermal characterization of different substrates under dried conditions for extensive green roofs

*Julià Coma, Marta Chàfer, Alvaro de Gracia, Gabriel Perez, Luisa F. Cabeza  
Universitat Politècnica de Catalunya (Spain), Universitat Rovira i Virgili (Spain),  
Universitat de Lleida (Spain)*

J119 - Experimental comparison between two different HTF operating in a Two-tank molten salts plate heat exchanger charging process

*Gerard Peiró, Jaume Gasia, Laia Miró, Cristina Prieto, Luisa F. Cabeza  
Universitat de Lleida (Spain), Abengoa Research (Spain)*

L120 - Experimental thermal evaluation of thin rammed earth walls in Mediterranean climate

*Susana Serrano, Álvaro de Gracia, Luisa F. Cabeza  
Universitat Rovira i Virgili (Spain), Universitat de Lleida (Spain)*

X285 - Experimental analysis of the heating system in a public administration building

*Juan C. Herrera, Miguel A. Villamañán, José J. Segovia, M. Carmen Martín, César R. Chamorro*

*Cortes de Castilla y León (Spain), Universidad de Valladolid (Spain)*

V162 - Study on solar absorptivity of silica sand under different aging stages for CSP applications

*Camila Barreneche, Anabel Palacios, Alejandro Calderón, Mercè Segarra, A. Inés Fernández  
University of Barcelona (Spain), University of Lleida (Spain)*

O174 - Analysis of the energy performance of the air-to-air heat recovery systems required by Spanish regulations in office buildings located in different climatic zones of Spain

*L. García-Lozano, J.F. Belmonte  
Universidad de Castilla-La Mancha (Spain)*

X271 - Estudio de Viabilidad Técnica de Instalaciones Solares Térmicas mediante Programas de Cálculo en la Asignatura de Instalaciones Industriales y Comerciales

*Juan Félix González, Carmen González, Eduardo Sabio, Silvia Román, Beatriz Ledesma, Andrés Álvarez  
Universidad de Extremadura (Spain)*

- R272 - Aplicación de hoja de cálculo para estudios de microgeneración en la asignatura de eficiencia energética en instalaciones industriales  
*Juan Félix González, Andrés Álvarez, Beatriz Ledesma, Eduardo Sabio*  
*Universidad de Extremadura (Spain)*
- Y183 - Progress of Research on Lightened Clay Bricks  
*M.C. Juárez, M.P. Morales, P. Olasolo, J. Martínez Santolaya*  
*Universidad Internacional de La Rioja (Spain), Universidad Autónoma de Chile (Chile)*
- L240 - Military Energy Management Plans (PGEMi) in Marine Infantry Deployments  
*Amador Martínez, Guillermo Rey, Carlos Ulloa, Diego Pablo Ruíz*  
*Technological Institute of Energy Certification (Spain), Defense University Center(Spain), Universidad de Granada (Spain)*
- X282 - Estudio de alternativas de recuperación de energía en climatizadores de aire primario  
*David Villalta Mompeán, Rubén Barbero Fresno, Fernando Varela Díez, José Daniel Marcos del Cano, Santiago Aroca Lastra*  
*Universidad Nacional de Educación a Distancia (Spain)*
- S281 - Life cycle assessment (LCA) of a system for buildings heating, cooling, and DHW implementing thermochemical energy storage  
*Aran Solé, Carol Pascual, Alvaro de Gracia, Asier Martínez, Dieter Boer, Luisa F. Cabeza*  
*Universitat Jaume I, Tecnalia (Spain), Universitat Rovira i Virgili (Spain), Universitat de Lleida (Spain)*
- C194 - Modeling of a hybrid photovoltaic/thermal (PV/T) solar system  
*David González-Peña, Cristina Alonso-Tristán, Elena Arce, Andrés Suárez-García, Miguel Ángel Álvarez-Feijoo*  
*Universidad de Burgos (Spain), University Centre of Defence at the Spanish Navy Army (Spain)*
- N111 - PCM optimization for passive cooling and heating  
*Mohammad Saffari, Alvaro de Gracia, Cèsar Fernández, Luisa F. Cabeza*  
*Universitat de Lleida (Spain), Universitat Rovira i Virgili (Spain)*
- W238 - Comparison of different sections geometries for heat water collectors  
*David González Peña, Montserrat Díez Mediavilla, Cristina Alonso Tristán, M<sup>a</sup> Isabel Dieste Velasco*  
*Universidad de Burgos (Spain)*
- O229 - Cálculo de sistemas de producción de ACS con bomba de calor de CO2  
*Miguel A. Lozano, Sergio Ruiz*  
*Universidad de Zaragoza (Spain)*
- P127 - Modelado del comportamiento térmico de una canalización eléctrica prefabricada en diferentes condiciones ambientales  
*Carlos J. Renedo, Fernando Delgado, Agustín Santisteban, Inmaculada Fernández, Juan Carcedo, Félix Ortiz*  
*Universidad de Cantabria (Spain)*
- V226 - Application of AHP to designing complex energy systems  
*Carlos Ulloa, Andrés Suárez, José María Núñez, Guillermo Rey*  
*Defense University Center (Spain)*
- X201 - Ciclo híbrido Brayton-Rankine alimentado por fuentes de calor sensible: caso de salto de temperatura fijo y caso de calor residual.  
*Antonio Rovira, Marta Muñoz, Consuel Sánchez*  
*Universidad Nacional de Educación a Distancia (Spain)*

L200 - Ciclo combinado hibridado avanzado con turbina de gas parcialmente regenerativa

*Antonio Rovira, Consuelo Sánchez, Santiago Fernández, Marta Muñoz, Rubén Barbero*

*Universidad Nacional de Educación a Distancia (Spain)*

W232 - Modelado y optimización de la operación de un sistema de producción de frío con acumulación

*Miguel A. Lozano, Eduardo A. Pina, Luis M. Serra*

*Universidad de Zaragoza (Spain)*

G259 - Análisis termoeconómico e impacto medioambiental de refrigerantes de nueva generación para instalación frigorífica de supermercado

*José Daniel Marcos, José Enrique-Barrero, Fernando Varela*

*Universidad Nacional de Educación a Distancia (Spain)*

Q191 - Heat release analysis in a variable compression internal combustion engine with butanol

*Jesús Casanova Kindelán, Natalia Fonseca González, Celia López Lorente, Daniel Agudo Fernández*

*Universidad Politécnica de Madrid (Spain)*

O213 - Estudio de la combustión en un motor CFR con AVL Boost

*Natalia Fonseca, Jesús Casanova, Esther Garrido*

*Universidad Politécnica de Madrid (Spain)*

F172 – Experimental and simulated performance of a thermoelectric generator for internal combustion engine exhaust waste heat recovery

*Ivan Ruiz, Martí Comamala, Eduard Massaguer, Albert Massaguer, Toni Pujol, Lino Montoro*

*Universitat de Girona (Spain), Nabla Thermoelectrics*

X231 - Competency training and assessable learning standards in Energy in Secondary Education by means of Project Method

*José Francisco Clares Tomás, Mariano Alarcón García, Francisco del Cerro Velázquez*

*Universidad de Murcia (Spain)*

S287 - Development of reusable educational videos to improve the learning outcomes in subjects within the field of thermodynamics

*Ignacio Zabalza, Begoña Peña, Eva María Llera, Sergio Usón, Amaya Martínez, Luis Miguel Romeo*

*Universidad de Zaragoza (Spain)*

H212 - Dielectric characterization and PEM performance of photocrosslinked and post-sulfonated SEBS-DVB membranes

*R. Teruel-Juanes, C. Del Rio, O. García, J. D. Badia, A. Ribes-Greus*

*Universitat Politècnica de València (Spain), CSIC (Spain)*

**16:00 – 16:30 – Coffee-break**

**16:30 – 18:30 – Session 2**

**2.1 – Energy efficiency in buildings and industry (Room: 0.15)**

Chair: Javier Rey, Universidad de Valladolid

R118 - Partial loads as thermal energy storage enhancement strategy

*Jaume Gasia, Marc Martin, Aran Solé, Alvaro de Gracia, Simone Arena, Luisa F. Cabeza*

*Universitat de Lleida (Spain), Universitat Jaume I (Spain), Universitat Rovira i Virgili (Spain), Università degli studi di Cagliari (Italy)*

U163 - Material based-design for high temperature sensible heat storage using solid particle materials

*Alejandro Calderón, Camila Barreneche, A. Inés Fernández, M. Segarra, Anabel Palacios, Cristina Prieto, Alfonso Rodríguez-Sánchez, David Pérez-Osorio  
Universitat de Barcelona (Spain)*

X108 - Technical feasibility of supercritical CO<sub>2</sub> Brayton cycle in waste heat recovery applications

*Héctor García-Rey, Eva Arenas, José Ignacio Linares  
Universidad Pontificia Comillas (Spain)*

D227 - Waste heat recovery from urban data centres to increase energy efficiency of district heating and cooling networks

*Paolo Taddeo, Eduard Oró, Jaume Salom  
Catalonia Institute for Energy Research (Spain)*

E209 - Integrating renewable energy technologies and thermal energy storage to support building trigeneration systems. Analysis of the technical, economic, and environmental potential

*Eduardo A. Pina, Miguel A. Lozano, Luis M. Serra  
Universidad de Zaragoza (Spain)*

K223 - Study on "low-cost" PCM emulsion as Thermal Energy Storage material for District Heating applications

*Giulia Rinaldi, Ana Lázaro, Monica Delgado, José M<sup>a</sup> Marín, M<sup>a</sup> Concepción Peñalosa, Luis Serra, Vittorio Verda  
Universidad de Zaragoza (Spain), Politecnico di Torino (Italy)*

## **2.2 – Modelling and numerical simulation (Room: 0.17)**

Chair: Emilio Navarro, Universidad Politécnica de Valencia

F230 - Tube-fin assembly optimization in convective-radiative conditions

*Mariano Alarcón, Manuel Seco-Nicolás, Juan Pedro Luna  
Universidad de Murcia (Spain), Universidad Politécnica de Cartagena (Spain)*

F158 - Advanced parallel computing in engineering processes: Study of a molten-salt thermocline tank over a GPU architecture

*María Fernández-Torrijos, Celia Sobrino, José A. Almendros-Ibáñez, Gerardo Fernández-Escribano  
Universidad Carlos III de Madrid (Spain), Universidad de Castilla-La Mancha (Spain), Renewable Energy Research Institute, Albacete (Spain)*

D258 - Simulation and Optimization of a counterflow Tunnel Dehydrator

*Jose M. Sojo-Gordillo, Antonio Carrillo-Andrés, Samuel Guarino-Molina, Francisco Plaza-Gomáriz  
Universidad de Málaga (Spain)*

J247 - Thermal modeling of convective heat transfer in scientific instrumentation of Mars missions: implementation in thermal analysis of ATS and TIRS in MARS 2020

*Adrián Chamorro, Lilian Peinado, Isabel Pérez-Grande, José Antonio Rodríguez Manfredi, Alain Lepinette, Eduardo Sebastián  
Universidad Politécnica de Madrid (Spain), Centro de Astrobiología, CSIC-INTA (Spain)*

I197 - Polarization curve model for glucose fuel cells with depletion design

*Óscar Santiago, Teresa J. Leo, Miguel A. Raso, Emilio Navarro*



*Universidad Politécnica de Madrid (Spain), Universidad Complutense de Madrid (Spain)*

R148 - A thermodynamic model for a hybrid multistage Brayton thermosolar plant  
*Cesar Miguel Barbero, Rosa Pilar Merchán Corral, María Jesús Santos Sánchez, Antonio Calvo Hernández, Alejandro Medina Dominguez*  
*Universidad de Salamanca (Spain)*

### **2.3 – Refrigeration (Room: 0.16)**

Chair: José Miguel Corberán, Universidad Politécnica de Valencia

P110 - Modelling method for a simple vapour-compression refrigeration system  
*Gabriel Zsembinszki, Alvaro de Gracia, Pere Moreno, Xavier Albets, Ricard Rovira, Miguel Ángel González, Luisa F. Cabeza*  
*Universitat de Lleida (Spain), Universitat Rovira i Virgili (Spain), AKO Electromecànica (Spain)*

D260 - Análisis experimental del uso del R1234ZE(E) para sustitución del R134A en una instalación de compresión de vapor  
*Adrián Mota Babiloni, Joaquín Navarro Esbrí, Jorge Haro Ortuño, Francisco Molés Ribera, Ángel Barragán Cervera, Bernardo Peris Pérez*  
*Universitat Jaume I (Spain)*

A242 - Evaluation and optimization of two-stage vapor compressions cycles with vapor-injection  
*Fernando M. Tello-Oquendo, Emilio Navarro-Peris, José González-Maciá*  
*Universitat Politècnica de València (Spain)*

D245 - Correlation for optimal intermediate pressure in two-stage vapor compression cycles depending on the secondary fluid temperature lift  
*Fernando M. Tello-Oquendo, Emilio Navarro-Peris, José González-Maciá*  
*Universitat Politècnica de València (Spain)*

X294 - Diseño y Optimización de un Sistema de Refrigeración para la Fabricación de Adhesivos Termofusibles mediante el Desarrollo y Validación de un Modelo Computacional  
*F. Javier Iñigo, Leyre Catalán, Álvaro Martínez, Patricia Aranguren, David Astrain*  
*Universidad Pública de Navarra (Spain)*

W279 - Theoretical pinch point assessment for low temperature heating conditions according EN14825/2014  
*Emilio López Juárez, José González Maciá*  
*Universitat Politècnica de València (Spain)*

**18:30 – 19:30 – Meeting about CNIT conference**

**21:00 – Informal dinner at *El mirador dels Camps Elisis* restaurant**

*El mirador dels Camps Elisis*  
*C\ President Josep Tarradelles, 45-47*  
*25005 Lleida*  
*Telf. 973 21 34 61*

**THURSDAY**

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**9:00 – 11:00 – Session 3**

**3.1 – Thermo-physical properties of fluids. Experimental validation of modelling (Room: 0.18)**

Chair: Fernando Aguilar, Universidad de Burgos

Plenary presentation (H100) - Electrochemical impedance spectroscopy monitoring technique on thermal energy storage materials for CSP plants

*Angel G. Fernández, Abdiel Mallco*

*University of Antofagasta (Spain)*

L151 - Thermophysical properties of a nanofluid based on Therminol VP-1 and carbon nanoparticles under high temperature conditions

*Alexandra Gimeno-Furió, Nuria Navarrete, Rosa Mondragon, Leonor Hernandez, Raul Martinez-Cuenca, Luis Cabedo, J. Enrique Julia*

*Universitat Jaume I (Spain)*

H266 - Análisis de la propagación de incertidumbre de los errores de medida de temperatura en el método T-history

*Javier Mazo, Mónica Delgado, Ana Lázaro, Conchita Peñalosa, José María Marín, Belén Zalba*

*Universidad de Zaragoza (Spain)*

T199 - Modeling of a coaxial Borehole Heat Exchanger and experimental validation

*Antonio Cazorla-Marín, Carla Montagud, José Miguel Corberán, José Acuña*

*Universitat Politècnica de València (Spain), Royal Institute of Technology (Sweden)*

P138 - Experimental characterization of tubular heat exchangers with different methodologies

*José D. Moya, Juan F. Belmonte, Juan I. Córcoles-Tendero, Antonio E. Molina, José A. Almendros-Ibáñez*

*Renewable Energy Research Institute (Spain), Universidad de Castilla-La Mancha (Spain)*

A248 - Cálculo del potencial térmico de un muro pantalla termoactivado. Herramienta GEOTOOL

*Iñigo Urra, Mercedes Gomez de Arteché*

*Tecnalia (Spain)*

**3.2 – Thermal comfort and air conditioning (Room: 0.15)**

Chair: Dieter Boer, Universitat Rovira i Virgili

D249 - Zonas de Estancamientos en Viviendas y su Correlación con la Posición Relativa de las Entradas de Aireación y Evacuación

*Víctor del Campo Díaz, Jesús Nicolás Peña Suárez*

*Universidad del País Vasco (Spain)*

G173 - Algoritmo de control de elementos de sombras y climatización zonificada en el sector residencial

*Francisco Fernández Hernández, José Manuel Cejudo López, José Miguel Peña Suárez, Mari Carmen González Muriano*

*Altra Corporación Empresarial (Spain), Universidad de Málaga (Spain)*

W153 - Assessment of air temperature patterns caused by an air conditioning unit via thermographic images of a sheet of paper



*Jorge Aramburu, Raúl Antón, Juan Carlos Ramos, Gorka S. Larraona, Alejandro Rivas*

*Universidad de Navarra (Spain)*

L220 - Thermal performance of an earthbag building compared to a traditional dwelling in hot semi-arid climate

*Lidia Rincón, Ursula Beltran, Marc Medrano, Sergi Vall, Ingrid Martorell*

*Universitat de Lleida (Spain)*

O176 - Evaluación del confort térmico en una habitación de hospital sometida a diferentes tasas de renovación de aire

*F.A. Berlanga, I. Olmedo, M. Ruiz de Adana*

*Universidad de Córdoba (Spain)*

F179 - Análisis experimental de la capacidad desecante de sistemas híbridos basados en ruedas desecantes activadas a baja temperatura mediante sistemas de refrigeración por compresión de vapor

*F. Comino, M. Ruiz de Adana*

*Universidad de Córdoba (Spain)*

### **3.3 – Thermal and hybrid engines. Combustions cells and processes (Room: 0.17)**

Chair: Jesús Casanova, Universidad Politécnica de Madrid

Plenary presentation (X224) - Autoignition of butanol isomers blended with diesel and biodiesel fuels

*Magín Lapuerta, Juan José Hernández, Alexis Cova-Bonillo*

*Universidad de Castilla-La Mancha (Spain), Universidad de Oriente (Venezuela)*

K160 - Motor cycle desing for ocean thermal energy conversion

*Rodrigo Burón Bernabé, Mario Álvarez Fernández, Montserrat Díez Mediavilla,*

*David González Peña, Cristina Alonso Tristán*

*Universidad de Burgos (Spain), Santa M<sup>a</sup> de Garoña Nuclear Power Plant (Spain)*

S186 - Gastone: A new integral engineering concept to enhance the CNG powertrain efficiency

*Estefanía Hervás-Blasco, Emilio Navarro-Peris, José Miguel Corberán*

*Universidad Politécnica de València (Spain)*

M225 - Thermodynamic diagnosis of n-butanol blends in a Euro 6 diesel vehicle

*Magín Lapuerta, Rosario Ballesteros, José Rodríguez-Fernández, Angel Ramos,*

*David Fernández-Rodríguez*

*Universidad de Castilla-La Mancha (Spain)*

L167 - Estimation of the rate of diesel fuel injection with solenoid operated injector

*Jose Antonio Soriano, Jorge Duarte, Carmen Mata, Cristian Ávila*

*Universidad de Castilla-La Mancha (Spain), Universidad del Atlántico (Colombia),*

*Universidad de Antioquia (Colombia)*

### **3.4 – Refrigeration (Room: 0.16)**

Chair: Gabriel Zsembinski, Universidad de Lleida

B136 - How to assess subcooling

in household refrigerator?

*Laetitia Bardoulet, José Miguel Corberán, Santiago Martinez-Ballester*

*Universitat Politècnica de València (Spain)*

E102 - CO<sub>2</sub> with mechanical subcooling vs. CO<sub>2</sub> cascade cycles for medium temperature commercial refrigeration applications. Thermodynamic analysis

*Rodrigo Llopis, Laura Nebot-Andrés, Daniel Sánchez, Jesús Catalán, Ramón Cabello*

*Universitat Jaume I (Spain)*

I149 - Experimental evaluation of a CO<sub>2</sub> transcritical refrigeration plant with dedicated mechanical subcooling

*Laura Nebot-Andrés, Rodrigo Llopis, Daniel Sánchez, Jesús Catalán-Gil, Ramón Cabello*

*Universitat Jaume I (Spain)*

T150 - Comparison of a CO<sub>2</sub> transcritical refrigeration plant with dedicated mechanical subcooling or internal heat exchanger

*Laura Nebot-Andrés, Rodrigo Llopis, Daniel Sánchez, Jesús Catalán-Gil, Ramón Cabello*

*Universitat Jaume I (Spain)*

L270 - Experimental evaluation of a transcritical CO<sub>2</sub> refrigeration plant working with two subcooling systems: IHX and Mechanical subcooling

*Daniel Sánchez, Jesús Catalán-Gil, Rodrigo Llopis Doménech, Laura Nebot-Andrés, Ramón Cabello López, Enrique Torrella Alcaraz*

*Universitat Jaume I (Spain)*

X195 - In-situ quantitative analysis of CO<sub>2</sub>/C<sub>3</sub>H<sub>8</sub> mixtures in the working conditions of a compression heat pump by near-infrared spectroscopy

*M. Isabel Barba, P. Boutellier, M. Soledad Larrechi, P. Tobaly, A. Coronas*

*Universitat Rovira i Virgili (Spain), CNAM, Laboratory CMGPCE (France)*

#### **11:00 – 11:30 – Coffee-break**

#### **11:30 – 13:30 – Session 4**

##### **4.1 - Energy efficiency in buildings and industry (Room: 0.15)**

Chair: Luis del Portillo, UPV/EHU

Plenary presentation – Hybrid solid sorption technology for solar heating and cooling systems

*Andrea Frazzica*

*Istituto Di Tecnologie Avanzate Per L'energia, Messina, Messina, Italy*

G159 - Multi-objective optimization comparative of bio-based and conventional insulation materials

*Alba Torres, Mariana Palumbo, Laureano Jiménez, Assed Naked Haddad, Dieter Boer*

*Universitat Rovira i Virgili (Spain)*

J114 - Optimization-based demand side management using thermal energy storage and solar PV for peak electricity demand reduction

*Mohammad Saffari, Alvaro de Gracia, Cesar Fernández, Martin Belusko, Dieter Boer, Luisa F. Cabeza*

*Universitat de Lleida (Spain), University of South Australia (Australia), Universitat Rovira i Virgili*

K188 - Optimal sizing of a heat pump booster to maximize benefit from the substitution of the production of sanitary hot water with gas boilers

*Estefanía Hervás-Blasco, Miguel Pitarch, Laetitia Bardoulet, Emilio Navarro-Peris*  
*Universidad Politècnica de València (Spain)*

N234 - Experimental Investigation on a Hybrid Enhanced Surfaces Absorption Heat Transformer Generator

*Asier Martínez, Laura Alonso, Xabier Peña, Aitor Agirre, Julen Hernández  
Tecnalia (Spain)*

N165 - Aprovechamiento de la biomasa forestal para suministrar calefacción y ACS en un complejo hospitalario. Propuesta de consumo casi nulo

*Ingrit Gómez, Víctor de la Peña, Víctor del Campo, Elena de la Peña  
Universidad del País Vasco (Spain)*

#### **4.2 - Modelling and numerical simulation (Room: 0.17)**

Chair: José A. Almendros, Universidad de Castilla-La Mancha

D146 - Parameter identification of a round-robin test box model using bayesian approach

*Borja Conde Carnero, Enrique Granada Álvarez, Pablo Eguía Oller, Marta Fernández Rodríguez, Lara Febrero Garrido  
Universidad de Vigo (Spain)*

P208 - Preliminary thermal analysis of the X-IFU radiative shields assembly

*Javier Piqueras Carreño, Isabel Pérez Grande, Manuel Reina Aranda  
Universidad Politécnica de Madrid (Spain), Payloads and Scientific Instrumentation Department (Spain)*

G241 - Developing CFD models to evaluate available energy in exhaust systems of diesel light duty vehicles

*Pablo Fernandez-Yañez, Octavio Armas, Arantzazu Gomez, Antonio Gil  
Universidad de Castilla-La Mancha (Spain), Universitat Politècnica de València (Spain)*

U291 - Characterization of transient propellant combustion

*José R. García-Cascales, Carmen López-Muñoz, Francisco Nicolás-López, Guillermo Monreal-González, F. Javier Sánchez-Velasco, Alejandro López-Belchí, José Serna-Serrano, Ramón Otón Martínez, Ramón Mur de Galdeano, Domingo Moratilla- Fernández  
Universidad Politécnica de Cartagena (Spain), University Center of Defense at the Spanish Air Force Academy (Spain), Expal Systems SA (Spain)*

W161 - CFD study of Vertical Wind Turbine Optimization

*Álvaro Peñalva-Pérez, David González-Peña, Cristina Alonso Tristán, Montserrat Díez-Mediavilla  
Universidad de Burgos (Spain)*

Q147 - Weather data influence in buildings transient thermal simulation

*Elena Arce Fariña, José María Alonso Rodríguez, Pablo Eguía Oller, Enrique Granada Álvarez, Francisco Manuel Troncoso Pastoriza  
Defense University Center (Spain), Universidad de Vigo (Spain)*

#### **4.3 – Renewable energies and environmental impact (Room: 0.16)**

Chair: Aran Solé, Universitat Jaume I

Plenary presentation (Y190) - Evaluating the energy consumption and the cost of a building based on the integration of BIM and LCA

*Karoline Figueiredo, Mariana Palumbo, Assed Haddad, Dieter Boer  
Universidade Federal do Rio de Janeiro (Brasil), Universidade Federal Fluminense (Brasil), Rovira i Virgili University (Spain)*

N135 - Ground solar receptor

*Jesús Gómez-Hernández, Marta Laporte, Javier Villa Briongos, Domingo Santana  
Universidad Carlos III de Madrid (Spain)*

O175 - Application of innovative storage operation strategies to alternative Fresnel based concentrating solar plants

*Andrés Sebastián, Rubén Abbas, Manuel Valdés, Javier Muñoz-Antón  
Universidad Politécnica de Madrid (Spain)*

V155 - Equivalent thermal conductivity in packed beds: review of correlations and its importance in energy storage systems

*Minerva Díaz-Heras, José D. Moya, Juan F. Belmonte, Juan I. Córcoles-Tendero, Antonio E. Molina, José A. Almendros-Ibáñez  
Renewable Energy Research Institute, Albacete (Spain), Universidad de Castilla-La Mancha (Spain)*

Y202 - Optimización del diseño y operación de un sistema de producción eléctrica basado en fuentes renovables y conectado a red

*Edwin S. Pinto, Miguel A. Lozano, Luis M. Serra  
Universidad de Zaragoza (Spain)*

I168 - Evaluación energética de una planta híbrida solar fósil de turbina de gas en ciclo cerrado regenerativo

*Javier Rodríguez Martín, Susana Sánchez Orgaz, Ángel Jiménez Álvaro, Ignacio López Paniagua Rafael Nieto Carlier, Celina González Fernández  
Universidad Politécnica de Madrid (Spain)*

#### **4.4 – Energy and exergy analysis (Room: 0.18)**

Chair: Manuel Ruiz de Adana, Universidad de Córdoba

Plenary presentation (B126) - Reduction of water consumption in Combined Cycle Power Plants by introducing Absorption Refrigeration Systems

*Rafael A. Salgado, José A. Almendros-Ibáñez, Juan F. Belmonte, Antonio E. Molina  
Interamerican University of Puerto Rico (Puerto Rico), Renewable Energy Research Institute (Spain), Universidad de Castilla-La Mancha (Spain)*

U215 - Performance analysis of a polygeneration plant using the cold recovered from a LNG-regasification process

*Antonio Atienza-Márquez, Joan Carles Bruno, Alberto Coronas  
Universitat Rovira i Virgili (Spain)*

P130 - Energy efficiency of pumping systems in a heat exchangers network

*Juan I. Córcoles, José D. Moya, Juan F. Belmonte, José A. Almendros-Ibáñez, Antonio E. Molina  
Universidad de Castilla-La Mancha (Spain), Renewable Energy Research Institute, Albacete (Spain)*

O154 - Evaluación energética y exergética de sistemas de trigeneración mediante ciclos con combustión por lazo químico

*Ángel Jiménez Álvaro, Javier Rodríguez Martín, Susana Sánchez Orgaz, Ignacio López Paniagua, Rafael Nieto Carlier, Celina González Fernández  
Universidad Politécnica de Madrid (Spain)*

G233 - Modelling of the yield of a N<sub>2</sub> liquefaction plant as a function of the ratio of the total flow being expanded at the valve

*Ignacio López-Paniagua, Celina González-Fernández, Ángel Jiménez-Álvaro, Susana Sánchez-Orgaz, Javier Rodríguez-Martín, Rafael Nieto-Carlier  
Universidad Politécnica de Madrid (Spain)*

S104 - Symbolic Thermo-economic analysis in a NZEB Cogeneration facility for heating and DHW supply

*Ana Picallo Perez, Daniel Perez, Xabi Ruiz de Larramendi, José María Sala Lizarraga*  
*Universidad del País Vasco (Spain)*

**13:30 – 15:00 – Lunch**

**15:00 – 16:00 – Poster session**

Chair: José Ramón García Cascales, Universidad de Cartagena

W203 - Diseño de una práctica para determinar la velocidad de llama en premezclas gaseosas

*David Patiño, Jacobo Porteiro, Jose L Míguez, Araceli Regueiro*  
*Universidad de Vigo (Spain)*

N123 - A method to estimate the particle-size distribution of biomass soot agglomerates using fractal analysis

*Raquel Pérez-Orozco, Natalia Cid, David Patiño, Jacobo Porteiro*  
*Universidad de Vigo (Spain)*

G171 - Performance improvement in PVA-SSA membranes by GO addition for PEMFCs applications

*C. Gonzalez-Guisasola, A. Ribes-Greus, V. Soria*  
*Universitat Politècnica de València (Spain), Universitat de València de Estudi General (Spain)*

K198 - Estimation of photovoltaic potential in the buildings of the Spanish Naval Military School

*Andrés Suárez-García, David González-Peña, Montserrat Diez-Mediavilla, Miguel Ángel Álvarez-Feijoo, Elena Arce*  
*University Centre of Defence at the Spanish Navy Army (Spain), Universidad de Burgos (Spain)*

E131 - Benchmarking of energy demand of domestic and small business buildings

*Julià Coma, José Miguel Maldonado, Alvaro de Gracia, Toni Gimbernat, Teresa Botargues, Luisa F. Cabeza*  
*Universitat de Lleida (Spain), Universitat Politècnica de Catalunya (Spain), Sinagro ingenyeria (Spain), User Feedback Program (Spain)*

F265 - Cálculo y diseño de una instalación solar para climatización de piscina descubierta y calefacción por suelo radiante

*Antonio Ramiro González, Manuel Calderón Godoy, Juan Félix González González, Carmen María González García*  
*Universidad de Extremadura (Spain)*

G264 - Instalación fotovoltaica autónoma con apoyo de hidrógeno para estaciones meteorológicas aisladas

*Manuel Calderón Godoy, Juan Félix González González, Antonio Ramiro González, A. José Calderón Godoy*  
*Universidad de Extremadura (Spain)*

Z268 - Comparing the cost of storage in photovoltaics and concentrating solar power: batteries vs thermal energy storages

*Luis F. González-Portillo, Javier Muñoz-Antón, José M. Martínez-Val*  
*Universidad Politécnica de Madrid (Spain)*

U185 - Nitrous oxide as working fluid in Enhanced Geothermal Systems (EGS)

*P. Olasolo, M.C. Juárez, M.P. Morales, A. Olasolo, M.R. Agius*

*Universidad Internacional de La Rioja (Spain), Universidad Autónoma de Chile (Chile), Delft University of Technology (The Netherlands), University of Southampton (United Kingdom)*

X117 - La viabilidad económica de seguidores solares para la generación eléctrica en la Comunidad Autónoma de La Rioja (CAR)

*Luis M. López-González, Luis M. López-Ochoa, Jesús Las-Heras-Casas, José P. Paredes-Sánchez*

*Universidad de La Rioja (Spain), Universidad de Oviedo (Spain)*

U115 - El recurso solar y sus posibilidades futuras para la generación eléctrica en la Comunidad Autónoma de La Rioja (CAR)

*Luis M. López-González, Luis M. López-Ochoa, Jesús Las-Heras-Casas, José P. Paredes-Sánchez*

*Universidad de La Rioja (Spain), Universidad de Oviedo (Spain)*

I253 - Desarrollo de dispositivos termoeléctricos que mejoren las condiciones de vida de poblaciones en vías de desarrollo

*Ivan Ruiz, Martí Comamala, Eduard Massaguer, Albert Massaguer, Toni Pujol, Lino Montoro*

*Universitat de Girona (Spain)*

M177 - Annual analysis of different concentrated solar thermal linear receivers for gas combined cycle hybrid power plants

*Javier Muñoz-Antón, Manuel Valdés, Alberto Abanades, Rubén Abbas, Luis F. González-Portillo*

*Universidad Politécnica de Madrid (Spain)*

P178 - Supercritical CO<sub>2</sub> Brayton Power Cycles coupled to line focusing solar field optimization

*Luis Coco-Enríquez, Javier Muñoz-Antón, José M<sup>a</sup> Martínez-Val*  
*Universidad Politécnica de Madrid (Spain)*

D263 - Low global warming potential alternatives to R134a in Organic Rankine Cycles for low temperature heat sources

*Francisco Molés Ribera, Joaquín Navarro Esbrí, Bernardo Peris Pérez, Adrián Mota Babiloni*

*Universitat Jaume I (Spain)*

J262 - Study of the performance of a thermal energy storage tank with PCM working as a heat sink for a vapor compression chiller

*Antonio Real Fernández, Joaquín Navarro Esbrí, Ángel Barragán Cervera, Adrián Mota Babiloni, Francisco Molés Ribera, Bernardo Peris Pérez*

*Universidad CEU Cardenal Herrera (Spain), Universitat Jaume I (Spain)*

R221 - Monitorización y estudio del rendimiento estacional de una instalación de climatización VRV a 3 tubos en condiciones reales de utilización

*Fernando Varela Díez, Eloy Velasco Gómez, Francisco Javier Rey Martínez*  
*Universidad Nacional de Educación a Distancia (Spain), Universidad de Valladolid (Spain)*

H169 - Estudio experimental de la ventilación en un aula

*Eloy Velasco, Francisco Javier Rey, Julio San José, Ana Tejero, Manuel Andrés, Rosario Patiño, Javier M<sup>a</sup> Rey, Sergio González*

*Universidad de Valladolid (Spain)*

R133 - LLE of mixtures of phenyl acetonitrile + n-alkanes

*Cristina Alonso-Tristán, Isaías García de la Fuente, J. Antonio González, J. Carlos Cobos Hernández, Fernando Hevia, Ana Cobos, Luis F. Sanz*  
*Unidad de Burgos (Spain), Universidad de Valladolid (Spain)*

- S134 - Dielectric and refractive index measurements of 1-alkanol + hexan-1-amine systems at several temperatures  
*Cristina Alonso-Tristán, Fernando Hevia, Ana Cobos, Isaías García de la Fuente, Juan Antonio González, J. Carlos Cobos*  
*Unidad de Burgos (Spain), Universidad de Valladolid (Spain)*
- W122 - Novel process to valorize industrial co-products for low thermal energy storage (TES) application  
*Marc Martin, Pau Gallart-Sirvent, Aran Solè, Camila Barreneche, Gemma Villorbina, Ramon Canela-Garayoa, Luisa F. Cabeza*  
*Universitat de Lleida (Spain), Universitat Jaume I (Spain), Univeritat de Barcelona (Spain)*
- V284 - Vapor-liquid equilibria (VLE) and excess enthalpies of 1-pentanol or 2-pentanol + 1-hexene for characterizing biofuels  
*Alejandro Moreau, Jorge Rubio, Rodrigo Susial, Rosa M. Villamañán, Miguel A. Villamañán, M. Carmen Martín*  
*Universidad de Valladolid (Spain)*
- L193 - Density and speed of sound at 298.15 K and at atmospheric pressure for the binary mixture HFE-7200 + 2-propanol  
*Natalia Muñoz-Rujas, Fernando Aguilar, Eduardo A. Montero*  
*Universidad de Burgos (Spain)*
- H246 - Evaluating Equations of State to Model Thermodynamic Properties of Carbon Dioxide/Acetone Mixtures for Resorption Heat Pumps  
*Daniel Salavera, Alberto Coronas*  
*Universitat Rovira i Virgili (Spain)*
- Y283 - Densities and viscosities of aqueous amine solutions for CO<sub>2</sub> capture  
*Eduardo I. Concepción, Daniel Lozano-Martín, Eduardo Pérez-Velilla, César R. Chamorro, José J. Segovia*  
*Universidad d Valladolid (Spain), Technology University of Panama (Panama)*
- X296 - Nuevas configuraciones en sistemas booster de CO<sub>2</sub> para climas cálidos (II). Análisis energético y medioambiental  
*Jesús Catalán Gil, Daniel Sánchez García-Vacas, Rodrigo Llopis Doménech, Laura Nebot Andrés, Ramón Cabello López*  
*Universitat Jaume I (Spain)*
- X293 - Influencia en las instalaciones y en la certificación de los profesionales que utilizan los gases fluorados del nuevo Real Decreto (115/2017) sobre Gases Fluorados  
*José Ramón López, Mahmoud Bourouis*  
*Universitat Rovira i Virgili (Spain)*
- X295 - Desarrollo de un sistema de generación termoeléctrica a partir de calor residual procedente de humos de la combustión  
*D. Astrain, P. Aranguren, M. Araiz, A. Martínez, A. Rodríguez, M.G. Pérez*  
*Universidad Pública de Navarra (Spain)*
- X297 - Workability of PCM-enhanced cementitious mortars  
*Lorenzo Olivieri, José Antonio Tenorio, David Revuelta, Cesar Bartolomé, José Sánchez, Servando Álvarez, Lidia Navarro, Luisa F. Cabeza, José Luis Cano*  
*Instituto Eduardo Torroja CSIC (Spain), IECA (Spain), Universidad de Sevilla (Spain), Universitat de Lleida (Spain), Indagsa (Spain)*
- V145 - Sensitivity analysis of a vertical geothermal heat exchanger simulation  
*Marta Fernández Rodríguez; Pablo Eguía Oller; Enrique Granada Álvarez; Borja Conde Carnero; Diego José Diarte*  
*Universidad de Vigo (Spain)*

**16:00 – 16:30 – Coffee-break**

**16:30 – 18:30 – Session 5**

**5.1 - Modelling and numerical simulation (Room: 0.17)**

Chair: Luis María López, Universidad de La Rioja

X129 - Influence of the corrugation shape on the heat exchanger performance with corrugated tubes

*Juan I. Córcoles, José D. Moya, Juan F. Belmonte, Antonio E. Molina, José A. Almendros-Ibáñez*

*Universidad de Castilla-La Mancha (Spain), Renewable Energy Research Institute (Spain)*

C256 - Performance Study of Compression-Resorption Heat Pump with Ammonia-Water Working Fluid Mixtures

*Maycon Cesar Magalhães, Juan Prieto, Alberto Coronas*

*Universitat Rovira i Virgili (Spain)*

R204 - Modeling and numerical simulation of a compression-assisted thermochemical refrigeration system activated with low-grade heat

*Jaume Fitó, Sylvain Mauran, Driss Stitou, Nathalie Mazet, Alberto Coronas*

*Universitat Rovira i Virgili (Spain), PROMES-CNRS (France), Université de Perpignan Via Domitia (Spain)*

D252 - Thermal modeling and validation of a vehicle cabin using TRNSYS

*Daniela C. Váscquez-Núñez, José González-Maciá, Jorge Payá*

*Universitat Politècnica de València (Spain)*

B254 - Influence of the glazing transmissivity and the vehicle body absorptivity on the thermal performance of a minibús

*Daniela C. Váscquez-Núñez, José González-Maciá, Jorge Payá*

*Universitat Politècnica de València (Spain)*

**5.2 – Refrigeration (Room: 0.16)**

Chair: Ana Lázaro, Universidad de Zaragoza

J235 - Evaluación de las prestaciones de un refrigerador horizontal de corriente continua, con almacenamiento térmico, para el procesamiento de quesos a pequeña escala

*Adriana Coca-Ortegón, Victor Torres-Toledo, Joachim Müller, Alberto Coronas*

*Universitat Rovira i Virgili (Spain), Universität Hohenheim (Germany)*

K250 - Nuevas configuraciones en sistemas booster de CO<sub>2</sub> para climas cálidos (I). Análisis de ciclos

*Jesús Catalán Gil, Daniel Sánchez García-Vacas, Rodrigo Llopis Doménech, Laura Nebot Andrés, Ramón Cabello López*

*Universidad Jaume I (Spain)*

*Universitat Jaume I (Spain)*

I103 - HFC407H a low GWP drop-in of HFC404A. Experimental analysis in a low temperature direct expansion system

*Rodrigo Llopis, Daniel Sánchez, Ramón Cabello, Laura Nebot-Andrés, Jesús Catalán-Gil*

*Universitat Jaume I (Spain)*

*Universitat Jaume I (Spain)*

H278 - Impact assessment of R290 retrofit of a 8kW air-to-water heat pump

*Emilio López Juárez, José González Maciá*

*Universitat Politècnica de València (Spain)*



G269 - Experimental analysis of a commercial R134a/CO<sub>2</sub> cascade refrigeration system working with direct and indirect expansion

*Daniel Sánchez García-Vacas, Rodrigo Llopis Doménech, Ramón Cabello López, Jesús Catalán-Gil, Laura Nebot-Andrés*  
*Universitat Jaume I (Spain)*

G290 - Evaluación de condensador de minicanales trabajando con R32 y R410A

*Alejandro López-Belchí, Fernando Illán-Gómez, José Ramón García-Cascales*  
*Centro Universitario de la Defensa - Academia General del Aire (Spain),*  
*Universidad Politécnica de Cartagena (Spain)*

### 5.3 – New concepts of thermodynamic engines (Room: 0.18)

Chair: Manuel Juárez, Universidad de La Rioja

Plenary presentation (V216) - Off-design analysis of a Hybrid Rankine-Brayton cycle used as the power block of a Solar Thermal Power Plant

*Marta Muñoz Domínguez, Antonio Rovira de Antonio, Consuelo Sánchez Naranjo*  
*Universidad Nacional de Educación a Distancia (Spain)*

S182 - Analysis of liquid metals as coolants for solar linear collectors

*Javier Casco, Nikola Lorenzin, Javier Muñoz, Alberto Abánades*  
*Universidad Politécnica de Madrid (Spain)*

E187 - Control of the optimal subcooling

*Estefanía Hervás-Blasco, Miquel Pitarch, Alejandro López-Navarro, Emilio Navarro-Peris, José Gonzalvez-Maciá, José Miguel Corberán*  
*Universidad Politècnica de València (Spain)*

R189 - Optimal subcooling in subcritical systems

*Miquel Pitarch, Estefanía Hervás-Blasco, Emilio Navarro-Peris, José Gonzalvez-Maciá, José Miguel Corberán*  
*Universitat Politècnica de València (Spain)*

X237 - Experimental convective heat transfer coefficient measurements in oscillatory-flow baffled tubes

*José Muñoz Cámara, Juan Pedro Solano Fernández, Jose Pérez García*  
*Universidad Politécnica de Cartagena (Spain)*

Q261 - Theoretical analysis of an Invertible HTHP/ORC system to profit from low grade waste heat sources

*Bernardo Peris Pérez, Joaquín Navarro Esbrí, Francisco Molés Ribera, Roberto Collado Puig*  
*Universitat Jaume I (Spain)*

**20:30 – Meeting in front of Centre de Cultures i Cooperació Transfronterera building, CTT (conference building) to take the bus**

**21:00 – Gala dinner at La Boscana restaurant**

*La Boscana*  
*Carretera de Bellvis a Bell-lloch LV-3311, Km.4*  
*25142 Bellví, Lleida*  
*Telf. 973 56 55 75*

FRIDAY

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10:00 – 12:00 – Session 6

**6.1 – Teaching innovation (Room: 0.17)**

Session organised by InPath-TES (Project Nº 657466 H2020)

Chair: Amparo Ribes, Universidad Politécnica de Valencia



Plenary presentation (U286) - Pilot experience on flipped classroom to improve the learning process in Engineering Thermodynamics

*Begoña Peña, Ignacio Zabalza, Sergio Usón, Eva María Llera, Amaya Martínez, Luis Miguel Romeo*  
*Universidad de Zaragoza (Spain)*

L109 - Two examples of EU funding for thermal energy storage: INPATH-TES and INNOSTORAGE projects

*Gabriel Zsembinski, Lidia Navarro, Francina Sole-Mauri, Luisa F. Cabeza*  
*Universitat de Lleida (Spain)*

D121 - Boosting responsibility in engineering: Challenges for national and global initiatives

*Ruth Carbajo, Luisa F. Cabeza*  
*Universitat de Lleida (Spain)*

M244 - CFD analysis of compressible flow in nozzles

*María Heras Huerta, David González Peña, Montserrat Díez Mediavilla, Cristina Alonso Tristán*  
*Universidad de Burgos (Spain)*

R196 - Challenges of teaching engineering thermodynamics to electronics and industrial management engineers by means of stand-alone courses

*Natalia Muñoz-Rujas, Eduardo A. Montero*  
*Universidad de Burgos (Spain)*

O164 - ¿Cómo se enfrentan a un problema de ingeniería los nuevos graduados?

*Susana Sánchez Orgaz, Javier Rodríguez Martín, Ángel Jiménez Álvaro, Ignacio López Paniagua, Rafael Nieto Carlier, Celina González Fernández*  
*Universidad Politécnica de Madrid (Spain)*

**6.2 – Energy efficiency in buildings and industry (Room: 0.15)**

Chair: Luis Serra, Universidad de Zaragoza

N210 - Experimental study of thermal performance of a water to water heat pump system

*Erik Salazar, Koldobika Martin, Ivan Flores, Luis del Portillo*  
*Universidad del País Vasco (Spain)*

T142 - Automatic Detection and Location of Light Sources in Building Interiors for BIM generation

*Francisco Manuel Troncoso Pastoriza, Pablo Eguía Oller, Enrique Granada Álvarez, Diego José Diarte García, Lara Febrero Garrido*  
*Universidad de Vigo (Spain)*

E217 - Energy analysis of university buildings. Are they early-adopters for UE nZEB targets?

*Marc Medrano, Josep Maria Martí, Lidia Rincón, Cristian Solé, Albert Castell*  
*Universitat de Lleida (Spain),*

P101 - Standby mode and fast hot start-up in auxiliary bi-drum boiler

*Naiara Romero, Koldobika Martín, Luis Alfonso del Portillo  
Universidad del País Vasco (Spain)*

I207 - Estimating the Heat Loss Coefficient of an in-use office building, floor by floor and as a whole, through basic monitoring and modelling

*Irati Uriarte, Catalina Giraldo, Koldo Martin, Luis Del Portillo, Aitor Erkoreka  
Universidad del País Vasco (Spain)*

### **6.3 – Renewable energies (Room: 0.16)**

Chair: Enrique Julià, Univeritat Jaume I

N124 - Impact of aging in the ESP performance during pellet combustion

*Natalia Cid, Raquel Pérez-Orozco, Javier Pereiro, Jose L Míguez  
Universidad de Vigo (Spain)*

K239 - Effect of paraffinic fuels on NOx and PM Diesel emissions

*Jose A. Soriano, Reyes Garcia-Contreras, David E. Leiva-Candia, Felipe Soto  
Universidad de Castilla-La Mancha (Spain), Universidad de Cordoba (Spain),  
Universidade Federal de Sao Joao del Rei (Brasil)*

J180 - A filter blocking rig to analyse biodiesel filterability in vehicles

*Juan J. Hernández, Javier Barba, Alejandro Calle  
Universidad de Castilla-La Mancha (Spain)*

W219 - Effect of the particle size and covering on large-scale forest biomass storage

*Esperanza Monedero, Rocío Collado, Alejandra Saffe, Amparo Pazo, Juan J.  
Hernández  
Universidad de Castilla-La Mancha (Spain), Universidad Nacional de San Juan  
(Argentina)*

F125 - Efecto de la inclusión de material poroso inerte en las emisiones de partículas en combustión de biomasa

*Araceli Regueiro, Sergio Chapela, Jacobo Porteiro, David Patiño  
Universidad de Vigo (Spain)*

E184 - Advanced aspects of research in Enhanced Geothermal Systems (EGS)

*P. Olasolo, M.C. Juárez, M.P. Morales, S. D'Amico, D. Valdani, M.R. Agius  
Universidad Internacional de La Rioja (Spain), Universidad Autónoma de Chile  
(Chile), University of Malta (Malta), Delft University of Technology (The  
Netherlands), University of Southampton (United Kingdom)*

**12:00 – 12:30 – Coffee-break**

**12:30 – 13:30 – Closing ceremony**

12:30 – 13:00 – Closing presentation

Antonio Turiel, Physical & Technological Oceanography Department (CSIC)

13:00 – 13:30 – Closing

**13:30 – Lunch**