

ECOS2023

LAS PALMAS DE GRAN CANARIA SPAIN

ECOS 2023 will take place in the week **June 25 - 30 2023** at the Auditorio Alfredo Kraus, in Las Palmas de Gran Canaria, Spain



36TH INTERNATIONAL CONFERENCE ON EFFICIENCY, COST, OPTIMIZATION, SIMULATION AND ENVIRONMENTAL IMPACT OF ENERGY SYSTEMS

TUESDAY MORNING

SESSION 1: 09:00-10:20

Session
A3

Room: Sala Cámara I L. ENERGY STORAGE I Chair person: Luisa Cabeza + Marcio Santos

Time	Presenter	ID	Title
09:00-09:20	Alberto Vannoni and Alessandro Sorce	4888	Performance comparison of cold thermal storage for gas turbine inlet cooling with traditional energy storage technologies in current electricity markets
09:20-09:40	Massimo Rivarolo, Daria Bellotti and Loredana Magistri	2e3a	Green hydrogen and ammonia synthesis: a techno-economic feasibility analysis for different plant sizes (1 – 60 MW) and scenarios
09:40-10:00	Diane Le Roux , Sylvain Serra, Sabine Sochard, Zakaria Aketouaned, Tessa Huberte, Ryad Bouzouidja, Alain Sempeyg and Jean-Michel Reneaume	f234	Modeling of a combined solar system including a thermal battery based on phase change materials
10:00-10:20	Josefine Koksharov , Jonas Klingelhöfer, Frank Dammel and Peter Stephan	64e2	Thermodynamic and economic analysis of a Carnot Battery with a two zone water tank as thermal energy storage

Session
B3

Room: Fuerteventura I B. EXERGY-BASED ANALYSIS: APPLICATIONS AND TEACHING IN ACADEMIA I Chair person: Daniel Favrat + Reynaldo Palacios-Bereche

Time	Presenter	ID	Title
09:00-09:20	Diego Luis Izidoro, Silvio de Oliveira Junior and Rafael Nogueira Nakashima	46e7	Exergoeconomic assessment of green hydrogen production via high temperature electrolysis powered by solar and wind energy
09:20-09:40	Yi Zhao , Francois Marechal, Hayato Hagi and Bruno Delahaye	d6ad	A holistic approach to refinery decarbonization
09:40-10:00	Mohammad Hassan Khoshgoftarmans , Soheil Davadgaran, Seyed Alireza Mousavi Rabetic, Ana M Blanco-Marigorta	60b0	Energy, exergy, exergoeconomic, and exergoenvironmental study of an innovative solar-wind-biomass driven polygeneration system for power, heat and ammonia production

June 25 - 30, 2023
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Consejería de Economía, Conocimiento y Empleo



Session C3 Room: Tenerife I N. ENVIRONMENTAL IMPACT OF ENERGY SYSTEMS. SUSTAINABILITY, RESILIENCE, & CIRCULAR ECONOMY. CO2 AND GHG MITIGATION I Chair person: Eden Mamut + Susana Sánchez Orgaz			
Time	Presenter	ID	Title
09:00-09:20	Barbara Palacino, Sonia Ascaso, Antonio Valero and Alicia Valero	3f44	Remediation costs of topsoil fertility: an exergy indicator of agricultural impacts
09:20-09:40	Pablo Silva Ortiz , Silvio de Oliveira Jr, Adriano Mariano, Agnes Jocherd and John Posada	2f01	Exergy-based improvements for sustainable aviation fuels
09:40-10:00	Chiara Monzani, Giulia Montanari , Alberto Poggio and Giulio Abdin Cerino	c908	A new approach for the hourly calculation of CO2 emission factors of the thermal energy production in District Heating Systems
10:00-10:20	Janis Edmunds Daugavietis, Jelena Ziemele	12ce	Coupling system dynamics model and multi-criteria analysis for a sustainability assessment of a district heating system's development

Session D3 Room: Lanzarote I P. DIGITALIZATION, BIG DATA, ARTIFICIAL INTELLIGENCE IN THE ENERGY SECTOR I Chair person: Yoshiharu Amano + Jarosław Hercog			
Time	Presenter	ID	Title
09:00-09:20	Laura Zabala Urrutia , Jesus Febres Pascual, Estibaliz Pérez Iribarren, Raymond Sterling and Iker González Pino	ae2e	Model predictive control with self-learning capability for automated demand response in buildings
09:20-09:40	Alessandra Ghilardi , Guido Francesco Frate, Francesca Leonetti, Nicola Fredducci, Luca Brancolini and Lorenzo Ferrari	e163	Detection of anomalous energy consumption in commercial activities through clustering techniques
09:40-10:00	Sundar Raj Thangavelu, Alessio Tafone , Imantha Gunasekhara, Sivanand Somasundaram and Morita Shignore	8c0c	Artificial Intelligence (AI) Based Predictive Maintenance of Waste Heat Recovery System
10:00-10:20	Youssef Elomari , Carles Mateu, Marc Marín-Genescà and Dieter Boer	aecf	A novel deep learning-based technique for smart control of heat pumps integrated into solar district heating systems

Session E3 Room: Gran Canaria I M. ENERGY USE IN THE INDUSTRIAL, RESIDENTIAL, TRANSPORTATION, AGRICULTURAL SECTORS. DISTRICT HEATING/COOLING. I Chair person: Ricardo Morel Hartmann+ Daniel Florez Orrego			
Time	Presenter	ID	Title
09:00-09:20	Francesco Calise, Francesco Liberato Cappiello, Luca Cimmino and Maria Vicidomini	44e7	Simulation model for the evaluation of the effect of office dressing code on building space cooling demand
09:20-09:40	Charlotte Marguerite , I-Gede Parwatha, Cécile Goffaux and Anne Meessen	75a2	A top-down approach based on simulations and optimisations to evaluate renovation of public buildings
09:40-10:00	Noelia Vicente , Belén Zurro, Sara González, Imanol Ruiz, José María Sala, José Manuel González and Ana Picallo	6de4	Analysis of building energy performance based on sensor data for building retrofiting
10:00-10:20	Chenghao Li , Yunfei Bai, Wei He and Jihong Wang	914c	An extended plug-flow model for temperature estimation of thermal stratification tanks considering buoyancy

10:20-11:00	<i>Coffee Break/Refreshments</i>
	Poster Exposition Session I Room: San Borondón

Session A4 Room: Sala Cámara A. BASIC AND APPLIED THERMODYNAMICS Chair person: Enrico Sciubba + Fernando Varela			
Time	Presenter	ID	Title
11:00-12:10	Richard A. Gagioli	Mini key note	Dimensionless Property Relations - Important Practical and Theoretical Prospects
12:10-12:30	Pierre Neveu , Baptiste Rebouillat and Quentin Falcoz	5481	Finite Time thermodynamics for optimizing power plants including heat storage device
12:30-12:50	Daniel Favrat and Malick Kane	5166	From the fuel heating value to the fuel exergy value in advanced energy systems

Session B4 Room: Fuerteventura B. EXERGY-BASED ANALYSIS: APPLICATIONS AND TEACHING IN ACADEMIA Chair person: Mauro Reini + Christine Minke			
Time	Presenter	ID	Title
11:00-11:30	Renzo Castillo and George Tsatsaronis	ac28	The exergy-based Thermodynamic Cost Accounting (TCA) approach for improving the design of thermal systems
11:30-11:50	Renzo Castillo and George Tsatsaronis	7f61	Thermodynamic Cost Accounting Analysis: application to the CGAM process
11:50-12:10	Rodrigo Guedes dos Santos, Miguel Ángel Lozano, Luis María Serra, Atílio Barbosa Lourenço and José Joaquim C. S. Santos	d3b1	Thermoeconomic cost allocation approaches in a simultaneous heating and cooling heat pump system
12:10-12:30	C. Wolf , E. Rothuizen, T. Ommen	b093	Exergoeconomic Analysis of a Solar Powered ORC using Zeotropic Mixtures for Combined Heat & Power Generation

Session C4 Room: Tenerife I G. FUELS, COMBUSTION & GASIFICATION. FUEL CELLS. HYDROGEN USE IN ENERGY SYSTEMS Chair person: Anna Stoppato + Alberto Abanades			
Time	Presenter	ID	Title
11:00-11:30	Silvia Nebra	Mini key note	Vinasse: ethanol production residue or co-product?
11:30-11:50	Diogo Silva, Nuno Clara, João Fonseca Pereira, Paulo Carvalho and Luis Serrano	9c4f	Effects of the use of 100% Biodiesel (B100) obtained from used vegetable oils on the consumption, emissions, and performance of vehicles and equipment.
11:50-12:10	Benjamin Steinrücken , Marcel Dossow, Maximilian Schmid, Maximilian Hauck, Sebastian Fendt, Florian Kerscher a and Hartmut Spliethoff	2845	Process simulation of fuel production through integration of high-temperature co-electrolysis in a Biomass-to-Liquid process
12:10-12:30	Thai-Quyen Quach , Dong Keun Lee, Yonggyun Bae, Young Sang Kim and Kook Young Ahn	b185	Optimization of levelized cost of electricity for ammonia-fed solid oxide fuel cell systems
12:30-12:50	C. Antetomaso , S. S. Merola, A. Irimescu, B. M. Vaglieco, S. Di Miccoe and E. Jannelli	4c6d	3D CFD simulation of water droplet dynamics on a fuel cell Gas Diffusion Layer by considering a realistic woven structure

Session D4 Room: Lanzarote I P. DIGITALIZATION, BIG DATA, ARTIFICIAL INTELLIGENCE IN THE ENERGY SECTORI Chair person: Adriano Sciacovelli + Constanza Saletti			
Time	Presenter	ID	Title
11:00-11:30	Yoshiharu Amano	Mini key note	Energy management system for automation
11:30-11:50	Hodaka Matsuzaki , Tatsuya Maruyama, Akira Yoshida and Yoshiharu Amano	f1d1	Time-series prediction of geothermal steam enthalpy using Temporal Fusion Transformer architecture
11:50-12:10	Tatsuya Maruyama , Hodaka Matuzaki, Akira Yoshida and Yoshiharu Amano	5d81	Analysis of a Deep Learning Model for Reinjection and Production Wells in a Geothermal Plant
12:10-12:30	Eziama Ubachukwu , Jana Pick, Lea Riebesel, Paul Lieberenz, Philipp Althaus, Dirk Müller, Andre Xhonneux	7886	LLEC Energy Dashboard Suite: User Engagement for Energy-Efficient Behavior using Dashboards and Gamification
12:30-12:50	Taha Boussaid , François Rousset, Vasile-Marian Scuturici and Marc Clause	1246	Evaluation of Graph Neural Networks as Surrogate Model for District Heating Networks Simulation

Session E4 Room: Gran Canaria I K. ENERGY POLICY AND PLANNING I Chair person: Francois Marechal + Elisabeth Beusker			
Time	Presenter	ID	Title
11:00-11:30	Sylvain Quolin	Mini key note	Energy sufficiency: the missing lever to tackle the energy transition
11:30-11:50	Stefano Mazzone , Greta Magnolia, Michela Vellini and Marco Gambini	b0d5	Decarbonisation & Optimization Strategies in Distributed Energy Community characterized by Demand of Electricity, Cooling, and Heating
11:50-12:10	Giacomo Crevani , Castro Soares, Emanuela Colombo	ec2c	Modelling financing schemes for energy system planning: a mini-grid case study
12:10-12:30	Paula Johanna Thimet , Siobhan Powell, Christof Knoeri	a876	How electric vehicle charging behaviours impact long-term electricity system capacity investment planning in Germany
12:30-12:50	Larissa Kühn , Lars Braun, Nico Fuchs, Laura Maier and Dirk Müller	edd1	Landlord-tenant dilemma: How does the conflict affect the design of building energy systems?

13:00-14:20	<i>Lunch</i>		
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Session A5 Room: Sala Cámara F. REFRIGERATION AND HEAT PUMPS Chair person: Anthony Bowman + José Daniel Marcos del Cano			
Time	Presenter	ID	Title
14:20-14:40	Joan Carles Bruno and Addarda Irsyad Usman	e629	Efficient Integration of advanced absorption heat pumps and chillers in District Heating and Cooling networks
14:40-15:00	Matteo Pettinari , Guido Francesco Frate, A. Phong Tran, Johannes Oehler, Panagiotis Stathopoulos, and Lorenzo Ferrari	bf38	Transient Analysis and Control of a Brayton Heat Pump during Start-Up
15:00-15:20	Sebastian Borges , Lasse Jöhnk, Tim Klebig, Christian Vering, Dirk Müller	4124	Fault Detection and Diagnosis by Machine Learning Methods in Air-to-Water Heat Pumps: Evaluation of Evaporator Fouling
15:20-15:40	Thor Alexis Sazon , Qian Zhang and Homam Nikpey	008f	Multi-objective optimization of a solar-assisted ground-source CO ₂ heat pump system for space and water heating using the Taguchi method and utility concept

Session B5 Room: Fuerteventura C. HEAT AND MASS TRANSFER Chair person: Ramón Vilanova + Wojciech Kostowski			
Time	Presenter	ID	Title
14:20-14:40	Ana Tejero-González ; Shiva Kumar; Sampath Suranjan Salins; S.V. Kota Reddy	d0a3	Influence of desiccant concentration and temperature on moisture absorption using a multistage dehumidifier
14:40-15:00	Victor M. Hernandez-Montecillo, J. Luis Luviano-Ortiz, Yanan Camaraza-Medina and Abel Hernandez-Guerrero	fa0e	Numerical analysis about liquid cooling implementation in a handheld projector
12:00-12:20	Piotr Radomski , Federica Zaccagnini, Paweł Ziólkowski, Francesca Petronella, Luciano de Sio and Dariusz Mikielewicz	fc43	Heat transfer of the multicolor-laser-sources-irradiated nanoparticles in reference to thermal processes
15:20-15:40	Stanisław Głuch , Tacjana Niksa-Rynkiewicz, Dariusz Mikielewicz and Piotr Stomma	99e5	Application of Feed Forward Neural Networks for modeling of heat transfer coefficient during flow condensation for low and high values of saturation temperature
15:40-16:00	Jorge Valencia-Santana , Carlos Mendieta-Pino, Alejandro Ramos-Martín and Vicente Henríquez-Concepción	c1e5	Analysis of first-order model for thermistors in compressible flows temperature measurement

Session C5 Room: Tenerife I G. FUELS, COMBUSTION & GASIFICATION. FUEL CELLS. HYDROGEN USE IN ENERGY SYSTEMS I Chair person: José Ignacio Linares + Anna Zylka			
Time	Presenter	ID	Title
14:20-14:40	Karol Sreniawski , Marcin Mozdierz, Grzegorz Bruszc, Janusz S. Szmyd	c1c1	A numerical analysis of transport phenomena in a banded solid oxide fuel cell stack
14:40-15:00	Yonggyun Bae , Kook Young Ahn, Young Sang Kim, Jin Young Park and Dong Keun Lee	67b8	Thermochemical variable analysis of solid oxide fuel cell with 3D multi-physical simulation
15:00-15:20	Valeria Pignataro , Angelica Liponi, Eleonora Bargiacchi and Lorenzo Ferrari	6ede	Dynamic modeling of a power-to-gas system for green methane production from wind energy
15:20-15:40	Vladimir L. Meca, Rafael d'Amore-Domenech, Antonio Villalba Herreros and Teresa J. Leo	119e	Test bench for electricity or hydrogen production from aqueous methanol
15:40-16:00	Abraham Quintana , José A. Carta, Fabián Déniz	aa6f	Sizing of a Green Hydrogen Energy System to power a micro-grid for residential use

Session D5 Room: Lanzarote I D. COMPUTATIONAL THERMO-FLUID DYNAMICS (CFD) I Chair person: Asfaw Beyene + Celia Miguel González			
Time	Presenter	ID	Title
14:20-14:40	Aleksandra Dzido and Piotr Krawczyk	7d0d	Mathematical model of the two-phase supersonic flow via dry-ice blasting nozzle
14:40-15:00	Alexander Vallejo , Idalberto Herrera, Juan E. Castellanos, Carlos Pereyra and Edwin Garabitos	9f1c	Urban wind potential analysis: Case study of wind turbines integrated into a building using on-site measurements and CFD modelling
15:00-15:20	Mohammadsadeh Pahlavanzadeh , Krzysztof Rusin and Włodzimierz Wróblewski	86af	Assessment of turbulent parameters modification to model roughness in the flow between rotating disks of Tesla turbine
15:20-15:40	Mujahid Naseem , Jonghwan Kim, Hafiz Ali Muhammad and Young Duk Lee	7514	Refinement of hydrogen supplied Solid Oxide Fuel Cell simulation parameters and its application for maximizing the fuel utilization limited to no-backflow condition
15:40-16:00	Sebastian Bastek , Mariam Fahmy, Sebastian Wilhelm, Sebastian Fendt and Hartmut Spliethoff	e84e	Optimization of a Horizontal Entrained Flow Plasma Gasification Test Rig through CFD-Simulation

Session E5 Room: Gran Canaria I M. ENERGY USE IN THE INDUSTRIAL, RESIDENTIAL, TRANSPORTATION, AGRICULTURAL SECTORS. DISTRICT HEATING/COOLING Chair person: Alicia Valero + Charlotte Marguerite			
Time	Presenter	ID	Title
14:20-14:40	Malik Hakim Elhafaia , Arley Nova-Rincon, Sabine Sochard, Sylvain Serrad and Jean-Michel Reneaume	e244	Optimization of the pipe diameters and the dynamic operation of a district heating network
14:40-15:00	Jaume Fitó , Julien Ramousse and Frédéric Wurtzb	ec2f	Innovative indicators for quantifying energy flexibility of district heating networks
15:00-15:20	Irati Prol-Godoy , Ana Picallo Perez, Iñaki Inza, Roberto Santana, Jose María Sala Lizarraga and Javier Rey Martínez	87bb	Predictive model of the behaviour of a building's thermal system to analyse the climate change influence
15:20-15:40	Roberto Capata	73b0	Mild Hybrid Multi-Energy Systems: Waste Energy Recovery by Bottom ORC System
15:40-16:00	Mathieu Brugeron, Mathieu Vallée , Antoine Leconte, Aurélie Fouquier, Adrien Brun	F4F2	Method for building's thermal flexibility in a multi energy vector district

20:00-21:30	Young Researchers Meeting Club El Alboroto (Address: Calle Remedios 10, Las Palmas de Gran Canaria)		
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