

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

THURSDAY MORNING

SESSION 1: 09:00-12:50

Session A9 Room: Sala Cámara I A. BASIC AND APPLIED THERMODYNAMICS I Chair person: Ozer Arnas + Antonio José Gutiérrez-Trashorras

Time	Presenter	ID	Title
09:00-09:20	Malick Kane and Daniel Favrat	c6b8	New approach for a general expression of effectiveness applied to all conversion technologies
09:20-09:40	Hasan Ghazale , Nathalie Mazet, Pierre Neveu and Maxime Perier-Muzet	984a	Hybrid thermochemical cycle for cold and electricity cogeneration: experimental analysis of the process behavior and expander-reactor coupling
09:40-10:00	Rafael Dias Assunção , Waldyr Luiz Ribeiro Gallo	08ee	Liquefaction of natural gas in offshore installations: effects of irreversibilities and composition of natural gas
10:00-10:20	Daisy Galeana, Ashenafi Abebe and Asfaw Beyene	fc93	Internal cooling of a gas turbine blade using Ranque-Hilsch vortex flow
10:20-10:40	Konstantinos Braimakis , Christos Xynos and Sotirios Karellas	360e	Thermodynamic investigation and design of a multi-generation ORC-ejector cooling cycle heat pump for vessel waste heat recovery

Session B9 Room: Fuerteventura I H. PROCESS INTEGRATION, PROCESS SIMULATION AND OPTIMIZATION, PROCESS MONITORING & CONTROL I Chair person: Gianluca Carraro + Stanislaw Anweiler

Time	Presenter	ID	Title
09:00-09:20	Eden Mamut, Roberto Melli , Enrico Sciubba	5a51	Application of a Diagnostic/Prognostic Tool to a reheating station of a district heating plant of the city of Constanța
09:20-09:40	Jan Stock , Malte Berrenberg, Andre Xhonneux, Dirk Müller	b712	Design and operational optimisation of a combined cooling, heating and power plant to enable waste heat integration into an existing district heating network
09:40-10:00	Marco Griesbach , Andreas König-Haagen, Florian Heberle and Dieter Brüggemann	ef18	Evaluation and optimization of the integration of ice energy storage systems in interconnected supply networks for non-residential buildings
10:00-10:20	Felix Stegemerten , Marwa Maghnie, Alexander Kümpel, and Dirk Müller	e521	Simulation-based performance assessment for building automation systems
10:20-10:40	Dareen Dardor , Daniel Flórez-Orrego, Cedric Terrier, Meire Ellen Ribeiro Domingos, Michel López, François Maréchal	c43f	ROSMOSE: A Web-based Optimization Tool to Aid Decision-making for the Design and Operation of Industrial and Urban Energy Systems

Session C9 Room: Tenerife I G. FUELS, COMBUSTION & GASIFICATION. FUEL CELLS. HYDROGEN USE IN ENERGY SYSTEMS I Chair person: Assaad Zoughaib + Luis Serrano			
Time	Presenter	ID	Title
09:00-09:20	Álvaro García-Martínez, Aitor Fernández-Jiménez, Eduardo Álvarez-Álvarez, Eduardo Blanco-Marigorta and María José Suárez-López	2b6b	Experimental model of a hydrogen fuel cell using graphene pads as heat spreaders
09:20-09:40	Lingkang Jin, Rafael Nogueira Nakashima , Gabriele Comodi and Henrik Lund Frandsen	6ba4	Alkaline electrolysis for green hydrogen production: techno-economic analysis of temperature influence and control
09:40-10:00	Andreas Hanel , Rasmus Schamper, Marcel Dossow, Sebastian Fendt and Hartmut Spliethoff	f0cf	Energy System Analysis of the Power Sector Flexibility via Hydrogen Utilization
10:00-10:20	Dongkeun Lee , Young Sang Kim, Kook Young Ahn, Yonggyun Bae and Jin Young Park	0B99	Development and analysis of a dynamic model for SOEC system
10:20-10:40	Álvaro Benet, Antonio Villalba-Herreros , Óscar Santiago and Teresa J. Leo	b4c2	Application of genetic algorithms to the design and dimensioning of hybrid power plants fueled by alternative fuels

Session D9 Room: Lanzarote I I. RENEWABLE ENERGY I Chair person: Pascal Stouffs + Zlatina Dimitrova			
Time	Presenter	ID	Title
09:00-09:20	Gabriel Gomes Vargas, Silvio de Oliveira Junior and Pablo Silva Ortiz	36e9	Environmental and exergy performance of residual biomass for electricity generation
09:20-09:40	Aneta Magdziarz , Wojciech Jerzak and Mariusz Wądrzyk	2dcb	Benefits from co-pyrolysis of biomass and refused derived fuel for biofuels production: Experimental investigations
09:40-10:00	Chandan Pandey, Yong Yan Chai, Seiwen Ng, Sandesh S. Chaugule , Gan Huang and Christos N. Markides	3691	A numerical study of concentrated photovoltaic-thermal (PV-T) solar collectors with spectral beam splitters
10:00-10:20	Pedro Navarro, Juan Miguel Serrano, Lidia Roca, Patricia Palenzuela, Manuel Lucas and Javier Ruiz	9896	Comparison between neural networks and the Poppe model for wet cooling tower performance prediction in CSP plants

Session E9 Room: Gran Canaria I M. ENERGY USE IN THE INDUSTRIAL, RESIDENTIAL, TRANSPORTATION, AGRICULTURAL SECTORS. DISTRICT HEATING/COOLING. | Chair person: Mathias Hofmann + David Wackerbauer

Time	Presenter	ID	Title
09:00-09:20	Francesco Calise , Francesco L. Cappiello, Luca Cimmino, Emmanuele, M. Saltarellid and Maria Vicidominie	24bb	Energy measures for reducing the energy demand of surgery rooms: a dynamic analysis
09:20-09:40	Ki-Yeol Shin , Sang-Su Bae, Kyoung-Min Koo, Kyung-Chul Cho, Si-Woo Park and Oh-Dae Kwon	75b5	Development of Waste Heat Recovery System for Biogas Engine Using Waste Resources in Industrial Complex
09:40-10:00	Meire Ellen Gorete Ribeiro Doming , Daniel Florez-Orrego, Moisés Teles dos Santos and François Maréchal	6f9a	Alternative energy supply approach for industrial complexes and district heating networks based on biomass integrated gasification
10:00-10:20	Juan José Roncal-Casano , Paolo Taddeo, Javier Rodríguez-Martín, Javier Muñoz-Antón and Alberto Abánades Velasco	1124	Techno-economic comparison of a solar absorption chiller and photovoltaic compression chiller
10:20-10:40	Jerry Lambert and Hartmut Spliethoff	0d03	A Nonlinear Optimization Method for Expansion Planning of District Heating Systems with Graph Preprocessing

10:40-11:00	Coffee Break/Refreshments
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Session A10 Room: Sala Cámara | L. ENERGY STORAGE | Chair person: Anna Stoppato + Piotr Lapka

Time	Presenter	ID	Title
11:00-11:20	Lianying Shan , Andrew Martin, Justin NW Chiu	dba9	Techno-Economic Analysis of Latent Heat Thermal Energy Storage Integrated Heat Pump for Indoor Heating
11:20-11:40	Afshin Mashayekh , Jung Hwan Park, Nishith Babubhai Desai, Jeong Ik Leed and Fredrik Haglind	a9ea	Comparative analysis of sensible heat and latent heat packed bed cold energy storage for liquid air energy storage systems
11:40-12:00	Maximilian Sporleder , Michael Ratha, Yuwei Xu, Mathias van Beek, and Mario Ragwitz	8728	Utilizing Historical Operating Data to increase Accuracy for Optimal Seasonal Storage Integration and Planning
12:00-12:20	Olivier Thome , Olivier Dumont and Vincent Lemort	82c7	Potential evaluation of Carnot battery integrating waste heat recovery in industry
12:20-12:40	A. García-Guzmán , D. A Rodríguez Pastor, J. A Becerra and R.Chacartegui	85a0	Modelling an ammonia cycle for thermochemical energy storage
12:40-13:00	V. K. Krastev , L. Bartolucci, G. Bella, S. Cordiner, G. Falcucci and V. Mulone	48ab	Power vs. capacity performances of thermally integrated MH-PCM hydrogen storage solutions: current status and development perspectives

Session B10 Room: Fuerteventura | C. HEAT AND MASS TRANSFER | Chair person: Juan Manuel González-Caballín + Dunia Esther Santiago

Time	Presenter	ID	Title
11:00-11:20	Enrico Sciubba	46d3	Exergy cost analysis of bifurcated circular vessels with permeable walls: beyond the Hess-Murray law
11:20-11:40	Enrico Sciubba	26b9	Predictive models for the "optimal" radius ratios in natural bi- and trifurcated vessels: beyond the Hess-Murray law
11:40-12:00	Pamela Martínez-Vega, Isaac Pérez-Raya, Abel Hernández-Guerrero and J. Luis Luviano-Ortiz	8656	Improving the Performance of a Double-Layer Micro Heat Sink
12:00-12:20	Julio C. Rodríguez-Mosqueda, Salvador Botello-Aceves, Yanan Camaraza-Medina, J. Luis Luviano-Ortiz and Abel Hernández-Guerrero	911a	Enhanced Thermal-Hydraulic Performance of a Naca Airfoil-Based Heat Sink
12:20-12:40	Samuel Ahizi , Pedro A. Marques, Miguel A. Mendez	2d9f	Modelling and Scaling Laws of cryogenic tank's thermal response to sloshing
12:40-13:00	Judit García-Ferrero , Rosa P. Merchán, María Jesús Santos, Alejandro Medina, Antonio Calvo Hernández, Paulo Canhoto and Andrea Giostri	4019	Solar volumetric receiver coupled to a parabolic dish: heat transfer and thermal efficiency analysis

Session C10 Room: Tenerife I Q. SMART GRIDS AND RENEWABLES INTEGRATION. DISTRIBUTED GENERATION I Chair person: Sotirios Karellas + Young Min Kim			
Time	Presenter	ID	Title
11:00-11:20	Sara Fakh , Mohamed Tahar Mabrouk, Mireille Batton-Hubert and Bruno Lacarrière	4835	Sensitivity analysis of the Power Demand Uncertainties on the electrical power system optimization models
11:20-11:40	Boyun Zhang, Tetsuya Wakui and Ryohei Yokoyama	10da	Time-domain decomposition for MILP-based long-term operational planning problems of energy storage and supply systems
11:40-12:00	Giulia Mancò , Elisa Guelpa and Vittorio Verda	2F2C	Modelling of a laboratory-scale district heating system for integration into multi-energy systems
12:00-12:20	Justin McCarty , Christoph Waibel and Arno Schluetera	a8d0	Detailed Modeling Framework for Integrated Photovoltaic in Partial Shading Conditions
12:20-12:40	Cedric Terrier , Joseph Loustau and François Maréchal	0 782	From local energy communities towards national energy system: a grid-aware techno-economic analysis
12:40-13:00	Gabriele Volpato and Gianluca Carraro	276b	Different allocation mechanisms to distribute the total profits of the Italian Renewable Energy Community

Session D10 Room: Lanzarote I I. RENEWABLE ENERGY I Chair person: Luis Mazorra + Selim Coskun			
Time	Presenter	ID	Title
11:00-11:20	Jesús Monterrubio, Roger Vilàa , Jonathan Cofré, Cristian Solé, Albert Castell and Ingrid Martorell	4ead	Covering energy demands of buildings with an adaptive radiative collector and emitter (AD-RCE)
11:20-11:40	Bartosz Stanek , Daniel Węcel and Łukasz Bartela	bdb8	Segmental application of two heat absorption intensification methods in parabolic trough collector solar loop
11:40-12:00	Maria Luisa Fernandes da Silva, Rogério Luis Aguilera, Milagros Cecilia, Palacios-Bereche, Antonio Garrido Gallego, Silvia Azucena Nebra, and Reynaldo Palacios-Bereche	7567	Energy evaluation of hydrogen production integrated into the ethanol and sugar production process
12:00-12:20	Manon Everaert , Willem Faes, Jarissa Maselync and Steven Lecompte	e537	Economical and ecological optimization of renewable energy solutions for thermal demands of livestock farms
12:20-12:40	Raul Saez , Dieter Boer, Adedamola Shobo and Manel Vallès	22c7	Data-driven techno-economic analysis of rooftop photovoltaic systems in the Spanish residential sector at municipal level

Session E10 Room: Gran Canaria I M. ENERGY USE IN THE INDUSTRIAL, RESIDENTIAL, TRANSPORTATION, AGRICULTURAL SECTORS. DISTRICT HEATING/COOLING. I Chair person: Martina Capone + Robin Fisher

Time	Presenter	ID	Title
11:00-11:40	Antonio Marco Pantaleo	Mini keynote	Energy systems flexibility: policy targets and innovation trends in thermal energy storage and funding opportunities from the European Innovation Council
11:40-12:00	Luc Girardin , Juan David Correa-Laguna, Joris Valee, Shivom Sharma, Daniel Florez-Orrego, Meire Ribeiro-Domingos, Rafael Castro-Amoedo, Yi Zhao, Julia Granacher, Marie Jones, Francisco Mendez Alva, Wim Clymans, Ivan Kantord, Frank Meinke-Hubeny and François Maréchal	c675	AIDRES: A database for the decarbonisation of the heavy industry in Europe
12:00-12:20	Patricia Mayer , Mario Heer, David Yang Shu, Nik Zielonka, Ludger Leenders, Florian Baader, André Bardow	e234	Flexibility from Industrial Demand-Side Management in a Net-Zero Sector-Coupled Energy System
12:20-12:40	Anandhi Parthiban, Eoin Cotter , David McCloskey	3343	Analysis of energy, economic and environmental performance of solar water heaters for domestic hot water supply in northern European climate
12:40-13:00	Ronelly J. De Souza , Emanuele Nadalon, Melchiorre Casisi, Mauro Reini, Luis M. Serra, Miguel A. Lozano	f782	Towards a Low Carbon Future: Evaluating Scenarios for an Energy Community through a Multi-Objective Optimisation Approach

13:00-14:15	Lunch
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Room: Sala Cámara | Special session: The future of Thermoconomics | Chair person: Richard Gaggioli

Time	Presenter	ID	Title
14:15-14:30	George Tsatsaronis	4137	The Future of Exergy-Based Methods
14:30-14:45	A. Valero , A. Valero-Delgado and C. Torres	dfc9	The future of Thermoconomics after the School of Zaragoza
14:45-15:00	Christos A. Frangopoulos and George Dimopoulos	8793	A contribution to the discussion on the Future of Thermoconomics
15:00-15:15	Enrico Sciubba	7015	The Exergy Footprint and the resource cost of Externalities
15:15-15:30	Daniel Favrat	757f	From thermoconomics to environomics and beyond
15:30-15:45	Andrea Lazzaretto	bc44	From Exergoeconomics to Thermo-X Optimization of energy systems
15:45-16:00	Mauro Reini and Melchiorre Casisi	10dd	The future of Thermoconomics: from industrial cost minimization toward cumulative resources accounting and sustainability assessment
16:00-16:30	Discussion		

20:00-23:00

ECOS Gala Dinner
Pueblo Canario
 (Address: Calle Francisco González Díaz, 6, 35005 Las Palmas de Gran Canaria)