

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

MONDAY MORNING

SESSION 1: 09:00-12:50

Time	Room: Jerónimo Saavedra
09:00-10:30	Opening Ceremony
10:30-11:00	Plenary session: Julieta Schallenberg. 2040 Gran Canaria: 100% Renewable Energy Island
10:30-11:00	<i>Coffee Break/Refreshments</i>

Session A1	Room: Jerónimo Saavedra O. ENERGY, MATERIALS, WASTE AND WATER: RESOURCES AND FOOTPRINTS Chair person: Enrico Sciubba + Rahul Kumar Singh		
Time	Presenter	ID	Title
11:00-11:30	Antonio Valero and Alicia Valero	Mini key note	Thermodynamics of sustainability, an introduction to natural resource valuation
11:30-11:50	Szymon Sobek, Barbara Mendecka, Lidia Lombardi, Hamza Mumtaz, Marcin Sajdak, Roksana Muzyka, Sebastian Werle	ca06	A Life Cycle Assessment of oxidative liquefaction as the recycling method of the end-of-life wind turbine blades
11:50-12:10	Hamza Mumtaz, Sebastian Werle , Szymon Sobek, Marcin Sajdak, Roksana Muzyka	3267	Comparative study of the oxidative liquefaction process for waste reduction and chemicals production from COVID-19 waste and wind turbine blades
12:10-12:30	Jorge Torrubia , Alicia Valero and Antonio Valero	124b	Energy cost and carbon footprint of metals. Implications for PV-Silicon panels
12:30-12:50	Jose-Luis Palacios, Alicia Valero , Óscar Jaime Restrepo Baena and Fabricio Pazmiño	ff8e	A new way to assess the loss of mineral wealth: the case of copper

June 25 - 30, 2023
ecos2023.com



Consejería de Economía, Conocimiento y Empleo



Session B1 Room: Fuerteventura I B. EXERGY-BASED ANALYSIS: APPLICATIONS AND TEACHING IN ACADEMIA I Chair person: César Torres + Sofía Russo			
Time	Presenter	ID	Title
11:00-11:30	Daniel Favrat and Malick Kane	Mini key note	Clear paths to teach exergy
11:30-11:50	Assal Selma , Mauro Reini, Michele Giani and Francesca Malfatti	63f7	Exergy and exergy cost analysis of biochemical energy conversion process: Application to the metabolic model of living cells
11:50-12:10	Kamil Stasiak , Ivar Ståle Ertesvåg, Paweł Ziótkowska and Dariusz Mikielwicz	e473	Exergetic analysis of the nCO2PP cycle with particular reference to the exergy destruction of sewage sludge due to gasification
12:10-12:30	Jannik Neumann Frank Dammel and Peter Stephan	abda	Advanced Exergy Analysis of the Flash Ironmaking Process
12:30-12:50	Janis Gerhardt-Mörsdorf , Jimena Incer-Valverde, Christine Minke and Tatiana Morosuk	8f73	Exergy analysis and exergetic life cycle assessment of a 5 MW PEM electrolyzer plant

Session C1 Room: Tenerife I G. FUELS, COMBUSTION & GASIFICATION. FUEL CELLS. HYDROGEN USE IN ENERGY SYSTEMS I Chair person: Rafael d'Amore + Maria Vicidomini			
Time	Presenter	ID	Title
11:00-11:30	Ana Stoppato	Mini key note	Production and use of green hydrogen in the industrial sector
11:30-11:50	Léonard Lefranc, José Ignacio Linares , Ana María Santos, Eva Arenas, Carlos Martín and Yolanda Moratilla	626e	The role of golden hydrogen in the decarbonising of urban buses
11:50-12:10	Florent Montignac , Maria-Candelaria Arpajou, Diego Larrahondo Chavez and Alain Ruby	7ea4	Multi-criteria optimization of hydrogen energy supply chains considering economic and environmental impacts: theoretical case study in the context of Balearic Islands
12:10-12:30	Mohamed Eldakadosi and Jana Schneeloch	6403	Economic and environmental impacts of integrating hydrogen-based technologies in the design optimization of sector-coupling energy systems in residential districts
12:30-12:50	Ana Cristina Ferreira , José Paulo Ferreira, Senhorinha Teixeira, Luís Barreiros Martins and José Carlos Teixeira	fea1	Development of a numerical optimization model for sizing hydrogen refuelling stations: application to a case study

Session D1 Room: Lanzarote I D. COMPUTATIONAL THERMO-FLUID DYNAMICS (CFD) I Chair person: M ^a José Suárez + Ioannis Anagnostopoulos			
Time	Presenter	ID	Title
11:00-11:30	Asfaw Beyene	Mini key note	Biomimicry, the case of morphing blades
11:30-11:50	Antonio Alcaide-Moreno , Miguel Ángel Castán-Lascorz and Valter Tavares	7ca4	An industrial-scale cement rotary kiln CFD model to characterise alternative fuel combustion profiles
11:50-12:10	Nicola Andreini , Guglielmo Vaccaro, Luca Socci, Adriano Milazzo	9785	Numerical Multiphase assessment of geometric key parameters in Venturi-type reactor for process intensification
12:10-12:30	Robert Lewtak, Beata Glot, Jarosław Hercog , Valter Domingos Tavares, Angela Maria Nunes, Daniela Gaspar	6647	Numerical assessment of the hydrogen combustion process in a rotary cement kiln
12:30-12:50	Abhishek Gupta, Sandesh S. Chougule , Sandip K. Saha	2a42	Numerical simulation on thermal management of concentrating photovoltaic-thermal module with confined jet impingement with Ag-ZnO hybrid nanofluids

Session E1 Room: Gran Canaria I K. ENERGY POLICY AND PLANNING I Chair person: Andrea Lazzaretto + Semra Bakkaloglu			
Time	Presenter	ID	Title
11:00-11:30	François Maréchal	Mini key note	2nd principle to make Switzerland independent and neutral
11:30-11:50	Georgios Mavromatidis , Jesvy Kalapurayil, Alicia Lerbinger, Christof Knoeri	9d94	The impact of different carbon emission accounting methods on optimal building retrofit strategies
11:50-12:10	Pablo Jimenez Zabalaga , Sergio Balderrama, Matija Pavicevic, Evelyn Cardozo, Paolo Thiran, Gauthier Limpens and Herve Jeanmart	735d	Towards low-carbon energy systems: The case of Bolivia until 2035
12:10-12:30	Arnau Aliana , Georgios Mavromatidis and Christof Knoer	db51	MANGOpol: A modelling framework for the optimal co-design of policy mixes and energy systems
12:30-12:50	Carlos A. A. Fernandez Vazquez , Sergio Balderrama and Sylvain Quoilin	6d91	Using PyPSA-Earth to address energy systems modelling gaps in developing countries. A case study for Bolivia

13:00-14:20	Lunch
-------------	-------

Session A2 Room: Jerónimo Saavedra F. REFRIGERATION AND HEAT PUMPS Chair person: Alojz Poredos + Joan Carles Bruno			
Time	Presenter	ID	Title
14:20-14:40	Cordin Arpagaus , Sidharth Paranjape, Stefan Nertinger, Rigo Tietz and Stefan Bertsch	9357	Review of Business Models for Industrial Heat Pumps
14:40-15:00	Volodymyr Voloshchuk, Paride Gullo, Oleksandr Stepanets and Eugene Nikiforovich	99 e8	Exergy-based sizing of a R290 air-to-water reversible heat pump for space heating and cooling purposes
15:00-15:20	Christoph Höges , Lennard Wissing, Christian Veringa and Dirk Müller	069e	How to Choose the Best Refrigerant in Heat Pumps from an Ecologic Perspective? Analyzing the Influence of the Evaluation Method
15:20-15:40	Max Bird , Salvador Acha, Emilio Jose Sarabia Escriva and Nilay Shah	9890	Data-driven Modelling of Supermarket Refrigeration Systems for Model Predictive Control Applications
15:40-16:00	Lana Liebl , André Bardow and Dennis Roskosch	423a	Large-scale screening of working pairs for hybrid electrochemical cooling

Session B2 Room: Fuerteventura H. PROCESS INTEGRATION, PROCESS SIMULATION AND OPTIMIZATION, PROCESS MONITORING & CONTROL Chair person: Ramón Vilanova + José Teixeira			
Time	Presenter	ID	Title
14:20-14:40	Alicia Crespo, Daniel Gibert, Luisa F. Cabeza and Cèsar Fernández	34a1	Deep reinforcement learning as control strategy of a solar-driven seasonal sorption heat storage system
14:40-15:00	Rafael Nogueira Nakashima , Peter Vang Hendriksen, Henrik Lund Frandsen	5f99	Optimal operation of energy systems including heat integration and storage solutions
15:00-15:20	Felix Birkelbach , Lukas Kasper, Paul Schwarzmayr and Rene Hofmann	874b	Operation planning with thermal storage units using MILP: Comparison of heuristics for approximating non-linear operating behavior
15:20-15:40	Meng Qi, Lina Wang, Yuqiu Chen and Haoshui Yu	40 e4	Sustainable LNG Supply Chain by Integrating Cold Energy Storage, Allam Cycle, and Carbon Capture

Session C2 Room: Tenerife I N. ENVIRONMENTAL IMPACT OF ENERGY SYSTEMS. SUSTAINABILITY, RESILIENCE, & CIRCULAR ECONOMY. CO2 AND GHG MITIGATION I Chair person: George Tsatsaronis + Federico León			
Time	Presenter	ID	Title
14:20-14:40	Luca Soggi , Claudio Zuffi, Irene Aiello, Andrea Rocchetti, Daniele Fiaschi	2b1e	Utilisation of groundwater heat pumps for the decarbonisation of heating and cooling sector: the analysis of an Italian case study
14:40-15:00	Susana Sánchez-Orgaz , Javier Muñoz Antón, Marina Tadeo Cañete and Javier Rodríguez Martín	3db1	Use of residual energy from underground infrastructures: Madrid – Seville Metro station.
15:00-15:20	Carlos Pereyra-Mariñez , José Andrickson Mora, Victor Ocaña Guevara, Felix Santos García, Alexander Vallejo Díaz	7d3b	Sustainable and resilience energies supply systems planning methodology for evaluating evolution of development in remote communities
15:20-15:40	Francesco Mezzera , Giuseppe Muliere, Marianna Pozzi, Fabrizio Fattori, Lorenzo Aurelio Cassette and Mario Motta	bc45	Evaluating the value of photovoltaics in decarbonization scenarios: evidence from the Lombardy Region
15:40-16:00	Alba Martínez-López, Paula Ballester-Falcón, Luis Mazorra-Aguar and Africa Marrero	a575	Techno-economic analysis of solar photovoltaic systems in Short Sea Shipping's compliance with carbon intensity indicator regulations

Session D2 Room: Lanzarote I I. RENEWABLE ENERGY I Chair person: Eden Mamut + Alejandro Ruiz			
Time	Presenter	ID	Title
14:20-14:40	Jannis Langer , Francesco Lombardi, Stefan Pfenninger, Jaco Quist and Kornelis Blok	fb96	The role of inter-island power transmission for full decarbonisation pathways of archipelagic island states: first results for Indonesia
14:40-15:00	Daniela Contreras Uribe , Luis Mazorra Aguilar, Eduardo Vega Fuentes	4e0f	Technical Economic Study of A Collective Photovoltaic Installation
15:00-15:20	Milagros Cecilia Palacios-Bereche , Reynaldo Palacios-Bereche, Antonio Garrido Gallego, Luis M. Serra, Miguel A. Lozano and Silvia Azucena Nebra	7010	Exergy cost assessment of Very High Gravity (VHG) Fermentation in the sugarcane industry
15:20-15:40	Ricardo Magdalena , Nicole Uys and Jochen Petersen	be9f	Feasibility of solar photovoltaic energy as an energy source for the electrowinning of zinc in South Africa
15:40-16:00	Lucas Rodrigues Loyola, Lucas Antônio Silveira Silva, Átila Pavan Vasconcellos, José Joaquim Conceição Soares Santos , João Luiz Marcon Donatelli, Carla César Martins Cunha	f90f	Thermo-economic Assessment of an Organic Rankine Cycle System for Repowering Application in a Landfill Biogas Power Plant

Session E2 Room: Gran Canaria I K. ENERGY POLICY AND PLANNING I Chair person: Francois Marechal + Juan Carlos Ríos Fernández			
Time	Presenter	ID	Title
14:20-14:40	Siobhan Powell	d3b8	Using long-run marginal emissions to reflect future grid changes in pricing signals for electric vehicle charging
14:40-15:00	Nico Fuchs , Jonas Baumgärtner, Dominik Hering and Dirk Müller	59ac	Development of an optimization-based methodology for subsidy programs of residential buildings
15:00-15:20	Alizon Huallpar , Marco Navia, Isaline Gomand, Sergio Balderrama, Matija Pavicevic and Sylvain Quoilin	6f0f	Comparative analysis of dynamic and linear programming energy systems models applied to the Bolivian power system
15:20-15:40	Panagiotis Varelas , Mahdi Jamshidiha , Francesco Contino and Alessandro Parente	2fdf	The public perception in designing and implementing Energy and Climate Policies. A machine learning sentiment analysis approach on Twitter.
15:40-16:00	M. Catania , F. Parolin, F. Fattoric and P. Colbertaldo	2f70	Impact of detailed hydropower representation in national energy system modelling