

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

WEDNESDAY MORNING

SESSION 1: 09:00-12:20

Session A6 Room: Sala Cámara I L. ENERGY STORAGE I Chair person: Rosa Pilar Merchán + Andrés Meana Fernández			
Time	Presenter	ID	Title
09:00-09:20	Inga Beyers , Astrid Bensmann and Richard Hanke-Rauschenbach	9d6f	Energy-power relations and Ragone plots for packed bed thermal energy storage
09:20-09:40	Lorenzo Ciappi, Pouriya Niknam, Robin Fisherc and Adriano Sciacovelli	cff4	Pillow plate latent heat thermal energy storage: a key enabler for waste heat recovery and energy flexibility in maritime sector
09:40-10:00	Marko Aunedi , Andreas V. Olympios, Antonio M. Pantaleo, Matthias Mersche and Christos N. Markides	93d7	Role of energy storage in residential energy demand decarbonization: system-level techno-economic comparison of low-carbon heating and cooling solutions
10:00-10:20	Jarosław Milewski , Olaf Dybinski, and Arkadiusz Szczesniak	a4af	External control strategy for Seasonal Thermal Energy Storage operation

Session B6 Room: Fuerteventura I H. PROCESS INTEGRATION, PROCESS SIMULATION AND OPTIMIZATION, PROCESS MONITORING & CONTROL I Chair person: Karolina Grabowska + Felix Birkelbach			
Time	Presenter	ID	Title
09:00-09:20	José Eduardo Sanson Portella de Carvalho , Romuald Rullière, Rémi Revellin and Florian Pradelle	6518	A seasonal assessment of a hybrid combined heat and power system with green hydrogen storage in Rio de Janeiro (Brazil) through an energetic, exergetic, exergoeconomic, and environmental analysis
09:20-09:40	Nicolas Campion , Jose Tomás Figueroa Bruce and Marie Münster	O904	Islanded production of green ammonia from wind, photovoltaic and concentrated solar power: a case study of Chile
09:40-10:00	Matteo Cavo, Luca Mantelli, Massimo Rivarolo and Andriy Vasylyev	8c7d	A MILP approach for hybrid energy systems design for sustainable maritime mobility
10:00-10:20	Antoine Mallégo , Arwa Khannoussi, Mehrdad Mohammadi, Bruno Lacarrière, Patrick Meyer	00b0	A fast heuristic algorithm for multi-energy system design

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Consejería de Economía, Conocimiento y Empleo



Session C6 Room: Tenerife I N. ENVIRONMENTAL IMPACT OF ENERGY SYSTEMS. SUSTAINABILITY, RESILIENCE, & CIRCULAR ECONOMY. CO2 AND GHG MITIGATION I Chair person: Antonio Valero + Jelena Ziemele			
Time	Presenter	ID	Title
09:00-09:20	Hannah Uhrmann , Florian Heberle and Dieter Brüggemann	7de8	Life Cycle Assessment and Scenario Analyses of an operating geothermal Heat Project in the Southern German Molasse Basin
09:20-09:40	Naveen Bhati , Mohammad Khaja Nazeeruddin and François Maréchal	4d4e	Process and material impact on life cycle assessment of perovskite solar cells
09:40-10:00	Tuananh Bui , Young Sang Kim, Dongkeun Lee and Kook Young Ahn	14ea	Environmental impact of the 20kW high-power solid oxide electrolysis cell system
10:00-10:20	Nana Chen , Xiaoqu Han, Yanxin Lia, Xiaofan Huang, Jiarui Li and Junjie Yan	a3ef	Sustainability Assessment of Typical Energy Storage Technologies for Peak Shaving Scenarios Based on the Full Life Cycle

Session D6 Room: Lanzarote I D. COMPUTATIONAL THERMO-FLUID DYNAMICS (CFD) I Chair person: Gianluca Carraro + Sandesh Surendra Chougule			
Time	Presenter	ID	Title
09:00-09:20	Cihan Sezer, Kenan Kaya, Mahdi Tabatabaei Malazi, Enrico Sciubba , Roberto Capata and Hasan Alpay Heperkan	bd14	Numerical Investigation of Performance of a Disc Shaped Branched Heat Exchanger
09:20-09:40	Philipp Ostmann , Lisa Krüger, Martin Kremer and Dirk Müller	03fe	Contribution of Geometric Features on the Aeroacoustic Behaviour of a Slot Diffuser
09:40-10:00	Milad Amiri , Pawel Ziolkowski, Kamil Stasiak, Dariusz Mikielewicz	B026	Analysis of cyclone separator solutions depending on SEC outlet conditions in nCO2PP
10:00-10:20	Jan Van den Berghe , Jagadish Babu Vemula, Yann Bartosiewicz and Miguel Alfonso Mendez	2499	A Machine Learning-based Calibration of a 1D Ejector Model from CFD

Session E6 Room: Gran Canaria I K. ENERGY POLICY AND PLANNING I Chair person: Marcin Sosnowski + Georgios Mavromatidis			
Time	Presenter	ID	Title
09:00-09:20	Claudia Sanchez , Pietro Di Betta, Nicolo Stevanato, Sergio Balderrama, Emanuela Colombo and Sylvain Quoilin	ba7e	Electricity Demand Forecasting for Rural Communities in Developing Countries: Calibrating a Stochastic Model for the Bolivian Case
09:20-09:40	Matija Pavicevic , Hervé Jeanmar tand Sylvain Quoilin	9b51	Generalization of the bi-directional soft-linking procedure between a long-term energy planning and short-term unit commitment and power dispatch model
09:40-10:00	Ben Cevallos and Javier Urquizo	527d	Spatial national multi-period long-term energy and carbon planning scenarios, including temporal network security analysis. Complementing renewable energy and hydropower due to climate change

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

Session A7 Room: Sala Cámara I F. REFRIGERATION AND HEAT PUMPS I Chair person: Sotirios Karellas + M. Esther Palacios			
Time	Presenter	ID	Title
11:00-11:30	Alojz Poredos	Mini key note	The role of heat pumps in heating and cooling
11:30-11:50	Goran Vučković , Mirko Stojiljković, Marko Ignjatović and Mića Vukić	e593	Detailed Exergetic Analysis of Air Source Heat Pump with VRV and VRT Technologies in Real Operational Conditions
11:50-12:10	Stephan Göbel , Kevin Waiz, Christian Veringa and Dirk Müller	e904	The impact of controller settings in heat pumps: Numerical findings and experimental verification
12:10-12:30	Fabian Wüllhorst , Jonas Reuter-Schniete, Laura Maier, Dominik Heringa and Dirk Müller	c9e4	Heat pump systems with photovoltaics: Influence of the control strategy on the optimal design
12:30-12:50	Brendon de Raad , Marit van Lieshout, Lydia Stougie, Andrea Ramirez	3c61	Identifying techno-economic improvements for a steam generating heat pump with exergy-based costs minimization

Session B7 Room: Fuerteventura I B. EXERGY-BASED ANALYSIS: APPLICATIONS AND TEACHING IN ACADEMIA I Chair person: Richard Gaggioli + Wojciech Kostowski			
Time	Presenter	ID	Title
11:00-11:30	Lydia Stougie , Brendon de Raad, Hedzer van der Kooi and Gijsbert Korevaar	Mini key note	Teaching Exergy to Engineering Students in view of the Energy Transition
11:30-11:50	Mathias Hofmann , Francesco Witte, Malte Fritz, Jonas Freißmann, Ilja Tuschy, George Tsatsaronis	4b66	Free and Open-Source Teaching: Understanding Exergy using Thermal Engineering Systems in Python (TESPy)
11:50-12:10	C. Torres , A. Valero and A. Valero-Delgado	5213	TaesLab: An advanced software tool for circular thermoeconomics
12:10-12:30	Ricardo Morel Hartmann , Luis Evelio Garcia-Acevedo and Amir Roberto De Toni Jr	6004	Thermodynamic assessment of Latin American cities applying exergetic efficiency: effects of information availability on efficiency evaluation

Session C7 Room: Tenerife I N. ENVIRONMENTAL IMPACT OF ENERGY SYSTEMS. SUSTAINABILITY, RESILIENCE, & CIRCULAR ECONOMY. CO2 AND GHG MITIGATION Chair person: Ozer Arnas + Joram Wasserfall			
Time	Presenter	ID	Title
11:00-11:30	Georgios Tsatsaronis	Mini key note	Do Hydrogen Economy and Power-to-X Technologies Maximize Decarbonization
11:30-11:50	Diana Shendrikova , Francesco Tonini, Matteo Vincenzo Rocco and Emanuela Colombo	6a0c	The role of nuclear in the energy transition: correlation analysis for sustainability indicators and a CO2 emission reduction assessment
11:50-12:10	Omkar Buwa , Jayendran Venkateswaran and Anand B.Rao	a6c4	Dynamic Life Cycle Sustainability Assessment of Mini-grids: A Proof-of-Concept
12:10-12:30	A. Manfredi , G. Manfrida, V. Veltroni, C. Zuffi	30c7	Possible Circular Use of CO2 Waste Streams from Geothermal Power Plants
12:30-12:50	Angelica Magne, Pablo Jimenez , Evelyn Cardozo	1d68	Environmental life cycle assessment of hydropower plant in Bolivia

Session D7 Room: Lanzarote I I. RENEWABLE ENERGY Chair person: Ofira Ayalon + Aneta Magdziarz			
Time	Presenter	ID	Title
11:00-11:30	Eden Mamut	Mini key note	Multi-scales and Multiphysics Optimization of Energy Systems integrating Nanomaterials and Nanotechnologies
11:30-11:50	Francesco Calise, Francesco Liberato Cappiello, Luca Cimmino and Maria Vicidomini	ba7f	An Innovative Solution for the Green Mobility of Heavy-Duty Trucks: Dynamic Simulation of Liquefied Biomethane Production
11:50-12:10	Eden Mamut , Laurențiu Oancea and Marcel Ionescu	394e	Solar Energy Drier for Algae with Water Recovery for Island Applications
12:10-12:30	Elena Vagnoni, Dogan Gezer, Ioannis Anagnostopoulos , Giovanna Cavazzini, Eduard Doujak, Marko Hočevár and Pavel Rudolf	5144	The new role of sustainable hydropower in flexible energy systems and its technical evolution through innovation and digitalization
12:30-12:50	Raul Saez , Rasool Kazemi, Manel Vallès, Dieter Boerd and Adedamola Shobo	d9a4	Evaluation of weather datasets for rural Energy Communities simulation

Session E7 Room: Gran Canaria I J. ENERGY-WATER NEXUS, DESALINATION, WASTE WATER TREATMENT I Chair person: Siobhan Powell + Meire Ellen Gorete Ribeiro Domingos			
Time	Presenter	ID	Title
11:00-11:30	Assaad Zoughaib	Mini key note	Water energy nexus: is thermal membrane distillation a game changer for industry?
11:30-11:50	Baltasar Peñate Suárez , Ana Musicki Savic, Francisco Javier Díaz Peña, Juan Antonio de la Fuente Bencomo		Water-energy nexus for irrigation with desalinated seawater in the Canary Islands
11:50-12:10	A. Frazzica , Y. Zhanga, A. Bonanno, V. Palomba, V. Brancatoa, W. Mittelbach	6012	Innovative low-grade sorption desalination technology for application on board of vessels
12:10-12:30	Hamed Ghiasirada , Towhid Gholizadeh, Saeed Rostamic, Bartosz Stanek, Anna Skorek-Osikowska and Lukasz Bartelaf	29f9	A triple solar desalination system integrated with a biomass fuelled SCO2 power cycle: Thermodynamic modelling
12:30-12:50	Rolando Argandona , Assaad Zoughaib and Rasha Mustapha	6612	A comprehensive review of water distillation technologies for green hydrogen production

13:00-14:20	<i>Lunch</i>		
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Session A8 Room: Sala Cámara I L. ENERGY STORAGE I Chair person: Adriano Sciacovelli + Diane Le Roux			
Time	Presenter	ID	Title
14:20-14:40	I.Marques-Valderrama , J. A Becerra, C. Ortiz, D. A Rodríguez Pastor and R.Chacarteguie	6166	Efficiency analysis in the chemical looping process of common metals
14:40-15:00	Olivier Dumont , Chiara Poletto, Olivier Thomé and Vincent Lemort	4163	Methodology for the sizing of a Carnot battery based on a Rankine cycle and application to a 10 kWe system for district heating application
15:00-15:20	Kenny Couvreur , Maité Goderis, Wim Beyne, Michel De Paepe	df73	Extension of the charging time energy fraction method for characterization of latent thermal energy systems to the use of variable initial battery conditions
15:20-15:40	Alberto Benato , Matteo Pecchini, Francesca De Vanna and Anna Stoppato	6569	Off-design analysis of a TES-based electricity energy storage system
15:40-16:00	Andrés Carro , Ricardo Chacartegui, Carlos Ortiz and Jose Antonio Becerra	E002	Operation balance for a CO ₂ -based electrothermal energy and geological storage system

Session B8 Room: Fuerteventura I H. PROCESS INTEGRATION, PROCESS SIMULATION AND OPTIMIZATION, PROCESS MONITORING & CONTROL I Chair person: Juan Carlos Rios + Maciej Dzikuc			
Time	Presenter	ID	Title
14:20-14:40	Stanisław Anweiler , Marek Kroka, Szymon Kołodziej, Małgorzata Sikora, Tibor Bešenić, Barbara Wasilewska, Sławomir Pochwałaa and Dawid Przysiężniuk	205e	Adaptive Incremental Controller for Airflow in Fluidized Bed Devices
14:40-15:00	Hafiz Ali Muhammad, Mujahid Naseem , Jonghwan Kim, Sundong Kim, Yoonseok Choi and Young Duk Lee	711d	Cost of green hydrogen production using concentrated solar power assisted solid oxide electrolysis
15:00-15:20	Ali Allahyarzadeh Bidgoli , Jurandir Itizo Yanagihara	31a0	Integration of the Compression Units of the Processing Plant with an Organic Rankine Cycle for Power Generation and Cooling Process
15:20-15:40	Simon Maier , Yoga Pranata Rahmat, Ralph-Uwe Dietrich	22c6	Identifying the ideal process configuration for a green methanol production plant dependent on economic boundary conditions
15:40-16:00	Namin Son , Hafiz Ali Muhammad, Hyerin Kim, Byungjun Kimd and Young Duk Lee	ca0d	Dynamic simulation of SOFC/PEMFC hybrid power generation considering power-grid demand fluctuation

Session C8 Room: Tenerife I G. FUELS, COMBUSTION & GASIFICATION. FUEL CELLS. HYDROGEN USE IN ENERGY SYSTEMS Chair person: Silvia Nebra + Ana Ferreira			
Time	Presenter	ID	Title
14:20-14:40	Nicolas Paulus , Dávila Camila and Vincent Lemort	8bf8	Pollutant testing (NO _x , SO _x and CO) of commercialized micro-combined heat and power (mCHP) fuel cells
14:40-15:00	René Kofler and Lasse Røngaard Clausen	dbd4	Optimizing the carbon efficiency of two-stage DME synthesis based on wheat-straw gasification
15:00-15:20	Jakub Kupecki , Tomasz Kowalczyk, Konrad Motylinski, Marcin Blesznowski, Marek Laskowski and Jędrzej Chmielewski	f116	Analysis on the performance of a hybrid system based on a biomass fired boiler integrated with reversible solid oxide cell (rSOC)
15:20-15:40	Pedro Afonso Marques , Samuel Ahizi, Miguel Alfonso Mendez	ba39	Real Time Data Assimilation for the thermodynamic modeling of a cryogenic fuel tank
15:40-16:00	Vladimir L. Meca, Oscar Santiago, Elena Posada, Rafael d'Amore-Domenech , Antonio Villalba-Herreros and Teresa J. Leo	dd02	Anode flow field design effect on direct methanol fuel cells

Session D8 Room: Lanzarote I I. RENEWABLE ENERGY Chair person: Pierre Neveu + Ingrid Martorell			
Time	Presenter	ID	Title
14:20-14:40	Francesco Calise, Francesco L. Cappiello , Luca Cimmino, Massimo Dentice d'Accadia, Emmanuele M. Saltarellie, Maria Vicidomini	35da	A novel paradigm for combined heat and power production for an hospital based on solid oxide fuel cell
14:40-15:00	Mikel Garro-Aguilar , Ana Picallo-Perez, Pablo Hernandez-Cruz, Juan M ^a Hidalgo-Betanzos, JM Sala-Lizarraga and Imanol Ruiz de Vergara-Ruiz de Azua	db9f	PV potential of the public building stock of the Basque Country
15:00-15:20	Eduardo Gonzalez-Mora and Eduardo A. Rincon-Mejía	e094	A simple truncation criterion in CPCs using constructal theory
15:20-15:40	Roger Vilà , Jesús Monterrubio, Mohammed Reda Haddouchea, Lídi Rincón, Marc Medrano	581	Adaptive radiative collectors and emitters (AD-RCE) to improve the efficiency of heat pumps
15:40-16:00	Pedro R. Gomes, António Nicolau, Ana Cristina Ferreira , Bruna Ramos, João Ferreira, José Costa, Filipe Santos, Eduardo Santos and Gonçalo Teixeira	2495	Development and assessment of an IoT system for monitoring air and soil quality in the agricultural sector

Session E8 Room: Gran Canaria I M. ENERGY USE IN THE INDUSTRIAL, RESIDENTIAL, TRANSPORTATION, AGRICULTURAL SECTORS. DISTRICT HEATING/COOLINGI Chair person: Dirk Müller + Deivis Ávila			
Time	Presenter	ID	Title
14:20-14:40	Eduardo A. Pina , Daniel Flórez-Orrrego and François Maréchal	a72b	Hybridisation Scenarios of Solid Oxide Fuel Cells, Batteries and Internal Combustion Engines for Waterborne Transportation
14:40-15:00	Lucas Striegela , Jean-Baptiste Bouvenot, Edouard Walthera and Hossein Nowamooz	58fd	Experimental and numerical study of geothermal rainwater tanks for buildings passive cooling
15:00-15:20	Antonio Famiglietti , Antonio Lecuona	05fc	Energetic and economic analysis of novel concentrating solar air heater using linear Fresnel collector for industrial process heat
15:20-15:40	Afsal Najeeb , Anand B Rao, Satish B Agnihotri, Vinod Mishra and Srinivas Sridharan	084f	Looking Beyond Appliances: A study of the socio-economic determinants of electricity consumption in India
15:40-16:00	Lalit Kumar Sahoo and Seema Ashishan Topno	654d	Energy performance of loading and hauling operations in opencast mines

18:00	ECOS Executive Council meeting Casa Museo Colón <i>(Address: Calle Colón, 1, 35001 Las Palmas de Gran Canaria, Las Palmas)</i>
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