FRIDAY MORNING SESSION 1: 09:00-12:50

Session A11	Room: Sala Cámara I L. ENERGY STORAGE I Chair person: Sylvain Quolin + Alberto Benato		
Time	**Presenter**	**ID**	**Title**
09:00-09:20	***Roger Padullés***, Magnus Lyck Hansen, Martin Pihl Andersen, Benjamin Zühlsdorf, Jonas Kjær Jensen and Brian Elmegaard	ccdd	Potential for optimal operation of Industrial Heat Pumps with Thermal Energy Storage for emissions and cost reduction
09:20-09:40	***Jorge Solis,*** Haruki Kohata, Johan Ericson and Magnus Nilsson	7466	Cost benefit analysis and forecasting of parameters for optimal battery use in energy storage system
09:40-10:00	***Said Madaoui***, Bartlomiej Guzowski, Roman Gozdur, Zlatina Dimitrova, Nicolas Audiot, Jocelyn Sabatier, Jean-Michel Vinassa and Franck Guillemard	ede3	Evaluation of dual side cooling system for prismatic batteries for vehicle aplications
10:00-10:20	***Márcio Santos***, Jorge André, Ricardo Mendes and José B. Ribeiro	a84b	Thermo-economic optimization of a Carnot Battery under transient conditions
10:20-10:40	***D.A Rodríguez-Pastor***, E. Carvajal, J.A Becerra,V.M Solterod and R. Chacar tegui	9bb0	Methanol-based thermal generation for energy-saving district heating networks: a techno-economic optimization

Session B11	Room: Fuerteventura I H. PROCESS INTEGRATION, PROCESS SIMULATION AND OPTIMIZATION, PROCESS MONITORING & CONTROL I Chair person: Alejandro Ruiz + Eduardo Antonio Pina		
Time	**Presenter**	**ID**	**Title**
09:00-09:20	***Minerva Vierunketo***, Anna Klemettinen, Markus A. Reuter, Rodrigo Serna-Guerrero	C615	Exentropy: a novel engineering tool to evaluate energy and material circularityExentropy: a novel engineering tool to evaluate energy and material circularity
09:20-09:40	***Rushit Kansara***, Michael Lockan	cea6	Combined physics-data driven modeling for design and operation optimization of an energy concept
09:40-10:00	***Loukas Kyriakidis,*** Miguel Alfonso Mendez and Martin Bähr	cfdd	A Hybrid algorithm based on Bayesian Optimization and Interior Point OPTimizer for Optimal Operation of Energy Conversion Systems
10:00-10:20	***Elisa Corbean***, Jannik Neumann, Frank Dammel, Peter Stephan, Stefan Ulbrich	f77f	Techno-Economic Optimization of an Innovative Plant for Sustainable Iron Reduction
10:20-10:40	***Sven Klute,*** Markus Hadam, Mathias van Beek and Marcus Budt	7556	Improving Computation Time for Optimization Runs of Modelica-based Energy Systems

Session C11	Room: Tenerife I G. FUELS, COMBUSTION & GASIFICATION. FUEL CELLS. HYDROGEN USE IN ENERGY SYSTEMS I Chair person: Teresa Leo + Nasrin Arjomand Kermani		
Time	**Presenter**	**ID**	**Title**
09:00-09:20	***Davide Pivetta***, Alessio Tafone, Stefano Mazzoni, Alessandro Romagnoli And Rodolfo Taccani	4995	A multi-objective optimization approach for the design of alternative port energy systems in tropical region
09:20-09:40	***Andrea Barbaresi***, Florian Kiefer, Mirko Morini, Panayotis Dimopoulos, Eggenschwiler and Agostino Gambarotta	5247	Partial-load and dynamic operation of methane synthesis reactors using sorption-enhanced catalysis
09:40-10:00	Angelo Di Domenico, Paolo Vitulli, Francesca Mennilli, ***Mosè Rossi*** and Gabriele Comodi	9dc4	Performance model of a Proton-Exchange Membrane (PEM) operating in steady-state conditions with Aspen HYSYS®
10:00-10:20	***Hossein Pourrahmani***, Milad Hosseini, Majid Siavashi, Hamza Moussaoui, Isabel Vazquez-Fernández, Mardit Matian and Jan Van herle	4a8d	Performance characterization of the proton exchange membrane fuel cell (PEMFC) using the Lattice Boltzmann modeling (LBM)
10:20-10:40	***Nicolas Paulus*** and Vincent Lemort	F207	Experimental investigation of a Solid Oxide Fuel Cell (SOFC) used in residential cogeneration applications

Session D11	Room: Lanzarote I P. DIGITALIZATION, BIG DATA, ARTIFICIAL INTELLIGENCE IN THE ENERGY SECTOR I Chair person: Daniel Favrat + Eziama Ubachukwu		
Time	**Presenter**	**ID**	**Title**
09:00-09:20	***Alessio Tafone***, Sundar Raj Thangavelu, Shigenori Morita, Alessandro Romagnoli	ee21	Multi-objective design optimization of a cryopolygeneration system in tropical climates - A techno-economic case study for a large-scale utility customer
09:20-09:40	***David Wackerbauer***, Thomas Schreibera and Dirk Müller	c780	Towards rule extraction for sector-coupled energy systems based on optimization models
09:40-10:00	Paolo Lazzeroni, ***Gianmarco Lorenti***, Francesco Moraglio and Maurizio Repetto	660e	Estimating hourly load profiles from electricity bills: different approaches based on data availability
10:00-10:20	***David Jansen***, Dominik Hering and Dirk Müller	ba53	BIM2SIM for hydraulic-focussed Energy Simulations – Automatic Generation of pre parametrized Simulation Models

Session E11	Room: Gran Canaria I M. ENERGY USE IN THE INDUSTRIAL, RESIDENTIAL, TRANSPORTATION, AGRICULTURAL SECTORS. DISTRICT HEATING/COOLING. I Chair person: Mauro Reini + Matisse Lesage		
Time	**Presenter**	**ID**	**Title**
09:00-09:20	*Martina Capone*, Elisa Guelpa and Vittorio Verda	ad18	District Heating Simulation Models to Foster the Transition of Existing Networks Towards Next-Generation Systems
09:20-09:40	***Alice Arcasi***, Alfonso William Mauro, Giovanni Napoli and Antonio Marco Pantaleo	c7bb	Energy cost impact analysis on the total cost of the crop production for different operating conditions. A salad production case study
09:40-10:00	***Pietro Ungar***, Christopher Schifflechner, Christoph Wieland, Hartmut Spliethoff and Giampaolo Manfrida	70d8	Thermo-economic comparison of CO2 and water as a heat carrier for long-distance heat transport from geothermal sources
10:00-10:20	***Jan Friedrich Hellmuth***, Michael Steeb, Markus Pollak, Florian Jäger Wilhelm, Tegethoffa and Jürgen Kohler	360f	Innovative thermal management operating strategies for battery-electric heavy-duty trucks
10:20-10:40	***Pierre Krisam***, Lena Rosin, Sebastian Glombik and Eva Schischke	c61f	Metaheuristic vs. mathematical optimization: A comparison of methods for the design optimization of residential building energy systems

10:40-11:00	*Coffee Break/Refreshments*

FRIDAY MIDDAY	SESSION 2: 11:00-12:50

Session A12	Room: Sala Cámara I L. ENERGY STORAGE I Chair person: Tetsuya Wakui + Jose Ricardo Sodre		
Time	**Presenter**	**ID**	**Title**
11:00-11:20	***Miguel Navarro,*** Ana Lázaro, Mónica Delgado and Gonzalo Diarce	251e	Design and evaluation of a stirred tank for its use as a thermal energy storage system using xylitol
11:20-11:40	***Maité Goderis,*** Julie Van Zele, Kenny Couvreura, Wim Beyne and Michel De Paepe	dab7	Analytical prediction of the phase change front movement to characterize tube in tube phase change material heat exchangers
11:40-12:00	***Markus Hadam*** and Marcus Budt	0b7f	Low-temperature compressed air energy storage with reversibly operable turbo- and piston machines
12:00-12:20	***Andrés Meana-Fernández***, María José Suárez-López, Eduardo Blanco, Jesús-Ignacio Prieto and David García	d6b1	Experimental analysis of the feasibility of using the ground as a temporary energy accumulator
12:20-12:40	***Rahul Kumar Singh,*** Antoni Gil Pujol, Ahmad Abdillah Bin Haron, Purvi Jain, Cliff Chuah Khiok Eng, Wooi Leong Tan and Alessandro Romagnoli	81e0	Accurate determination of supercooling degree in an ultra-low Phase Change Material based prototype system for Cold Thermal Energy Storage application
12:40-13:00	***Rosa Pilar Merchán Corrala,*** Mario Petrollesec and Giorgio Cau	3c23	Integration of renewable energy driven systems with a pumped thermal energy storage for providing dispatchable electricity

Session B12	Room: Fuerteventura I E. POWER GENERATION AND COMBINED HEAT AND POWER (CHP) PLANTS I Chair person: Asfaw Beyene + Rushit Kansara		
Time	**Presenter**	**ID**	**Title**
11:00-11:40	**Sotirios Karellas**	**Mini key note**	**Waste Heat/Renewable energy driven trigeneration systems**
11:40-12:00	Ryma Chouder, Max Ndamé Ngangué, ***Pascal Stouffs*** and Azzedine Benabdesselam	1371	First experimental results of a new free liquid piston Ericsson engine
12:00-12:20	***Roberto Martínez-Pérez***, Andrés Meana-Fernández, Juan Manuel González-Caballín, Alessia Manfredi, Francisco Javier Rubio-Serrano and Antonio José Gutiérrez-Trashorras	e8cf	Analytical study of the waste heat for energy use in a Hygroscopic Cycle with high lithium bromide concentration
12:20-12:40	João S. Pereira and ***José B. Ribeiro***	1d23	Energy analysis of a hybrid top/bottoming ORC based CHP configuration for residential applications
12:40-13:00	***Rafael Silverio Barbosa*** and Jurandir Itizo Yanagihara	0 8 e7	ORC design optimization method for offshore applications in part load conditions

Session C12	Room: Tenerife I Q. SMART GRIDS AND RENEWABLES INTEGRATION. DISTRIBUTED GENERATION I Chair person: Assaad Zoughaib + Francesco Calise		
Time	**Presenter**	**ID**	**Title**
11:00-11:20	***Costanza Saletti,*** Mirko Morini, Agostino Gambarotta	9e9a	Smart management for integrated energy systems: tools from communities to regions
11:20-11:40	***Malte Stienecker***	4e7d	How Forecast Errors affect Optimal Scheduling and Control of Distributed Cross-Energy Systems
11:40-12:00	***Enrico Dal Cin***, Gianluca Carraro, Andrea Lazzaretto, George Tsatsaronis, Gabriele Volpato and Piero Danielif	4101	Integrated design and operation optimization of multi-energy systems including energy networks
12:00-12:20	***Francesco Superchi***, Sander Schepers, Antonis Moustakis, George Pechivanoglou, Alessandro Bianchini	41c8	Towards the introduction of green hydrogen in the energy mix of Mediterranean islands through the integration of wind and solar power: a techno-economic case study
12:20-12:40	***Sebastian Berg***, Lasse Blaume and Benedikt Nilges	2190	Quantifying operational flexibility of distributed cross-sectoral energy systems for the integration of volatile renewable electricity generation
12:40-13:00	***Dominic Caviezel***, Christoph Waibel, Markus Schläpfer, and Arno Schluetera	84fd	Vehicle-to-Grid Coupled Photovoltaic Optimization for Singapore at a District Resolution

Session D12	Room: Lanzarote I P. DIGITALIZATION, BIG DATA, ARTIFICIAL INTELLIGENCE IN THE ENERGY SECTOR I Chair person: Alexander Sorgenicht + Katharina Bessler		
Time	**Presenter**	**ID**	**Title**
11:00-11:20	***Carlotta Tubeuf***, Felix Birkelbach, Anton Maly, Maximilian Krause and Rene´ Hofmann	d601	Enabling reinforcement learning for flexible energy systems through transfer learning on a digital twin platform
11:20-11:40	***Joseph Loustau***, Dorsan Lepour, Cedric Terrier and François Maréchal	1593	Clustering and typification of urban districts for energy system modelling
11:40-12:00	Gabriel Zsembinszki, Cèsar Fernández, Emiliano Borri and ***Luisa F. Cabeza***	df65	Study on control optimisation of a hybrid solar-biomass system for residential buildings using deep reinforcement learning
12:00-12:20	***Lennart Lahrs***, Pierre Krisam and Ulf Hermann	855c	Envisioning a Collaborative Energy System Planning Platform for the Energy Transition at the District Level
12:20-12:40	***Christian Pressa***, Stefan Leiprecht, Fabian Behrens, Verena Jetzinger, Hendric Popma and Matthias Finkenrath	0912	Benchmarking of state-of-the-art machine learning methods for highly accurate thermal load forecasting in district heating networks

Session E12	Room: Gran Canaria I M. ENERGY USE IN THE INDUSTRIAL, RESIDENTIAL, TRANSPORTATION, AGRICULTURAL SECTORS. DISTRICT HEATING/COOLING. I Chair person: Nicolas Marichal + Mohsen Sadeghi		
Time	**Presenter**	**ID**	**Title**
11:00-11:20	Anastasia Popiolek, ***Zlatina Dimitrova***, Marc Petit, Mouhcine Waraq and Philippe Dessante	62d2	A connected service between fast-charging station and limited-range electric vehicles to reduce infrastructure development costs
11:20-11:40	*Lazzeroni Paolo*, ***Lorenti Gianmarco***, Moraglio Francesco and Repetto Maurizio	532e	A MILP approach for demand management in renewable energy communities with residential end-users
11:40-12:00	***Davide Trapani***, Paolo Marocco, Marta Gandiglio and Massimo Santarelli	501c	Optimal design of renewable power-to-hydrogen systems for the decarbonization of a semiconductor industry
12:00-12:20	***Gabriela Zabik***, Felix Birkelbach, René Hofmann	6661	Qualitative comparison of on-site production of hydrogen and its synthesis products for steel processing industry
12:20-12:40	***Hagen Seele***, Jan Tautorus, Christiane Reinert, Niklas von der Aßena	b640	Optimization-based energy system planning under long-term uncertainty: Rapid Monte Carlo analysis using linear regression
12:40-13:00	***Alicia Lerbinger***, Siobhan Powell, Georgios Mavromatidis	99f0	Modeling of transformation pathways for district multi-energy systems including electric mobility

13:00-14:20	*Lunch*

FRIDAY AFTERNOON **SESSION 3: 14:20-16:30**

Session A13	Room: Sala Cámara I L. ENERGY STORAGE and I. RENEWABLE ENERGY I Chair person: Abel Hernández-Guerrero + Sebastian Werle		
Time	**Presenter**	**ID**	**Title**
14:20-14.40	***Francesca Carolina Marcello***, Davide Micheletto, Daniele Cocco and Vittorio Tola	4c8b	Modelling and performance analysis of a Low Temperature A-CAES system coupled with renewable energy power plants
14:40-15:00	***Francesco Piovesan***, Ali Akbar Eftekhari	3ed1	Integration of Salt Cavern Hydrogen Storage in a 100% Renewable Energy Supply Scenario
15:00-15:20	***Krzysztof Sornek***	9bb5	Solar air heaters with sensible heat storage for preheating ventilation air as a way to enhance building energy performance
15:20-15:40	Pedro Martínez***, Javier Ruiz***, Manuel Lucas, Jonas Pérez, Pedro Navarro and Alberto Rodríguez	12c9	Experimental study of an ultrasonic spray atomiser as an evaporative cooler

Session B13	Room: Fuerteventura I H. PROCESS INTEGRATION, PROCESS SIMULATION AND OPTIMIZATION, PROCESS MONITORING & CONTROL I Chair person: Sotiris Karellas + Antonio Villalba-Herrero		
Time	**Presenter**	**ID**	**Title**
14:20-14.40	***Andreas Siman Menzel***, Francesco Witte, Julio Augusto Mendes da Silva, Icaro Vilasboas Figueiredo and Armando Sá Ribeiro Jr.	e917	Metamodels for economically optimized closed brayton cycles
14:40-15:00	***Alix Untrau***, Sabine Sochard, Frédéric Marias, Jean-Michel Reneaume, Galo A.C. Le Roux and Sylvain Serraf	8be1	Rolling horizon Dynamic Real-Time Optimization of a solar thermal plant with a planning phase
15:00-15:20	*Pouriya H Niknam*, ***Robin Fisher***, Lorenzo Ciappi and Adriano Sciacovelli	4d9d	Driving decarbonisation of shipping sector by waste heat recovery solutions: a techno-economic assessment on technology selection
15:20-15:40	N. Di Michele, L. Talluri, P. Ungar, ***D. Fiaschi***	f915	Energy, Exergy and Exergo-economic analyses of supercritical CO2 cycles for the exploitation of a geothermal resource in the Mt. Amiata region

Session C13	Room: Tenerife I N. ENVIRONMENTAL IMPACT OF ENERGY SYSTEMS. SUSTAINABILITY, RESILIENCE, & CIRCULAR ECONOMY. CO2 AND GHG MITIGATION I Chair person: Daniele Fiaschi + Diana Shendrikova		
Time	**Presenter**	**ID**	**Title**
14:20-14.40	Roberto Capata, *Roberto Melli*, ***Enrico Sciubba***	79d1	Design and Analysis of a Sabatier-Based Power-To-Gas System with Integral Heat Recovery and downstream Syngas Cleaning
14:40-15:00	***Yijun Zhou***, Vivian WY Tam and Khoa N. Le	cbc3	Trade-off between embodied and operational carbon emissions of residential buildings in early design stage
15:00-15:20	***Yoann Jovet***, Frédéric Lefevre, Alexis Laurent and Marc Clausse	7a2b	Multi-criteria optimisation to align environmental impacts of industrial heat production with sustainable thresholds
15:20-15:40	***Daniel Flórez-Orrego***, Dareen Dardor, Reginald Germanier, François Maréchal	85b2	A systemic study for enhanced waste heat recovery and renewable energy integration towards decarbonizing the aluminium industry

Session E13	Room: Gran Canaria I M. ENERGY USE IN THE INDUSTRIAL, RESIDENTIAL, TRANSPORTATION, AGRICULTURAL SECTORS. DISTRICT HEATING/COOLINGI Chair person: Ofira Ayalon + Ali Akbar Eftekhari		
Time	**Presenter**	**ID**	**Title**
14:20-14.40	Agostino Gambarotta, Francesco Ghionda, ***Emanuela Marzi***, Mirko Morini and Costanza Saletti	0d4e	Optimal integration of Power-to-Gas and district heating through waste heat recovery from electrofuel production
14:40-15:00	***Alberto Abanades Velasco***, Angel Jiménez Álvaro and Juan Guerrero Padrón	9f49	Analysis of Sodium Water Reaction as heat source for district heating and cooling
15:00-15:20	***Matisse Lesage***, David Chalet, Jérôme Migaud and Christoph Krautner	0d54	Holistic approach to improve cabin air quality in electric vehicles and energy savings
15:20-15:40	***María Esther Palacios-Lorenzo*** *and* José Daniel Marcos	Od93	A high-fidelity simulation model for the precise characterization of a solar air-cooled ammonia-water absorption chiller at part load operation

15:40-16:00	**Closing Ceremony**