Thursday 4/7/2024

		4A Heat pumps and cooling systems I
		Chair: Daniel Favrat, Co-chair: Hannah Uhrmann
9:00	67	Development and experimental assessment of a solar cooling system based on ejector cooling cycle. *Konstantinos Braimakis, Spyros Kalyvas, Gabriel Palamidis, Tryfon Roumpedakis, Antonios Charalampidis, Efstratios Varvagiannis and Sotirios Karellas*
9:20	330	Demand response of a vapor-compression type air-conditioning system based on model predictive control and multiple feedback controls. *Tetsuya Wakui and Tomoki Yamahata*
9:40	278	Switchable multicyclic adsorption-based atmospheric water harvesting with solar and radiative sky cooling thermal concentration and heat pumps. *Primož Poredoš, He Shan, Zhao Shao, Fangfang Deng, Ruzhu Wang, Eva Zavrl, Tej Žižak and Ciril Arkar*
10:00	480	Analytical investigation of a pre-cooled heat pump for HVAC applications using the Maisotsenko cycle. *Javier Ruiz Ramírez, Clara Gascó Arranz, Michael Opolot, Sangkyoung Lee and Chunrong Zhao*
10:20	503	Thermodynamic comparative analysis of high temperature absorption heat transformers using various ionic liquids as working pairs. *Yutong Gong, Feng Liu, Jiyuan Zhou and Jun Sui*

		4B Energy communities
		Chair: Georgios Mavromatidis, Co-chair: Robert Müller
9:00	77	Optimizing local energy trading in residential neighborhoods: A price signal approach in local energy markets. *Carla Wüller, Joel David Schölzel, Rita Streblow and Dirk Müller*
9:20	94	Benefits of multi-good mini-grids for integrated electric and cold thermal energy supply - case study of a rural village and fishery in Zambezia, Mozambique. *Giacomo Crevani, Alessandro Onori, Nicolò Stevanato, Riccardo Mereu and Emanuela Colombo*
9:40	223	A Multi-objective approach for optimizing technical, environmental, and economic of energy communities: a case study of a residential community in Tarragona. *Youssef Elomari, Carles Mateu, Marc Marín-Genescà and Dieter Boer*
10:00	225	Optimal aggregation of users in energy communities. *Enrico Dal Cin, Sergio Rech, Marianna Benetti, Gianluca Carraro and Andrea Lazzaretto*
10:20	271	Integration feature-enhanced adaptive metaheuristic strategy with cross-validation and efficiency analysis for solar district energy system optimization. *Ruslan Kotegov, Mohamed Abokersh, Carles Mateu, Adedamola Shobo, Dieter Boer and Manel Vallès*

		4C Geothermal
		Chair: Dieter Brüggemann, Co-chair: Nikas Scheidt
9:00	251	CO_2 or water as heat transfer fluid in geothermal systems: a comparison for combined heat and power generation considering off-design performance. *Christopher Schifflechner, Pietro Ungar, Christoph Wieland, Giampaolo Manfrida, Daniele Fiaschi and Hartmut Spliethoff*
9:20	197	Integrated analysis of geothermal reservoir and binary power cycle system. *Nishith Babubhai Desai, Ivanka M. Orozova-Bekkevold, Frederik Lomholt Christensen and Fredrik Haglind*
9:40	378	Integration of hydrogen production with geothermal power plants: Utilizing H_2 as spinning reserve unit. *Alessia Manfredi, Giampaolo Manfrida, Carlo Carcasci and Daniele Fiaschi*
10:00	364	Interference analysis between production wells in a geothermal power plant using deep learning. *Kosuke Mori, Tatsuya Maruyama and Yoshiharu Amano*
10:20		

		4D Storage V
		Chair: Antonio Marco Pantaleo, Co-chair: Simone Piccardo
9:00	189	Modelling and simulation of a seasonal underground water storage coupled with photovoltaic panels, a heat pump and a district heating network for providing local renewable heating to a residential district. *Aitor Cendoya, Frederic Ransy, Vincent Lemort, Natalia Kozlowska, Pierre Dewallef and Jacques Windeshausen*
9:20	260	Integrated thermal energy storage system: The role of management strategies in the storage tank design methodology. *Simone Peccolo, Matteo Pecchini, Anna Stoppato and Alberto Benato*
9:40	273	Packed-bed thermal-storage system configurations for shuttle kiln waste-heat recovery. *Nikolaos Georgousis, Jan Diriken, Michel Speetjens and Camilo Rindt*
10:00	75	Liquid air energy storage system integrated into the hydrogen economy – A techno-economic investigation of waste cold recovery from liquid hydrogen regasification. *Alessio Tafone, Roberto Pili, Tobias Massier and Harald Klein*
10:20	299	Thermal energy storage for concentrating solar plant applications: an economic comparison between concrete and phase change materials. *Cristina Prieto, Emiliano Borri, Gabriel Zsembinszki and Luisa F. Cabeza*

10:40		**Coffee Break/Refreshments**

		Industrial Keynote Speeches (AHI-CARRIER, DESFA, Motoroil). Chair: Sotirios Karellas
11:00		Vassilis Karvounis (AHI Southeastern Europe S.A.): Exploiting the latest trends of heat pumps shaping sustainable building solutions
11:40		Michalis Thomadakis (DESFA) : Apollo CO_2: Decarbonizing the greek industrial sector through an aggregated CCS platform
12:10		Konstantinos Hatzifotis (Motoroil): Developing hydrogen value chain in Greece

		4E Energy communities / Microgrids II
		Chair: Sylvain Quoilin, Co-chair: Anna-Maria Sigounis
12:40	439	How clustering approaches affect the optimal design of future multi-energy systems. *Alessandro Pampado, Gabriele Volpato and Andrea Lazzaretto*
13:00	514	Optimal paths and priorities in the decarbonization of the energy sector. *Andrea Lazzaretto, Massimo Masi, Sergio Rech, Gianluca Carraro, Piero Danieli, Gabriele Volpato, Enrico Dal Cin and Edoardo Bregolin*
13:20	106	MILP decomposition approaches for the optimal design and investment planning of aggregated energy systems. *Vincenzo Dipierro, Lorenzo Parmeggiani, Lorenzo Pilotti and Emanuele Martelli*
13:40	523	Unlocking the Demand Flexibility: Data driven approach to leverage Virtual Power Plants for Local and Global Energy Benefits. *Araavind Sridhar and Jagruti Thakur*

		4F Waste management and utilization
		Chair: Florian Pradelle, Co-chair: Elias Vieren
12:40	49	Thermoeconomic analysis of copper recovery from e-waste: conventional vs low-carbon resources. *Jorge Torrubia, César Torres Torres, Antonio Valero, Alicia Valero, Ashak Mahmud Parvez, Felipe Garcia and K. Gerald van den Boogaart*
13:00	140	Oxidative liquefaction: a method of valorization of municipal solid waste and personal protective equipment. *Hamza Mumtaz, Szymon Sobek, Marcin Sajdak, Roksana Muzyka and Sebastian Werle*
13:20	310	A computational fluid dynamics-based eulerian-eulerian method for plastic waste disposal in a rotating bed. *Mehrdad Mesgarpour, Konstantinos Kyprianidis and Rebei Bel Fdhila*
13:40	566	Efficientenergy extraction from organic waste in circular systems. *Ana Momcilovic and Gordana Stefanovic*

		4G Solar IV
		Chair: Christos Tzivanidis, Co-chair: Alicia Lerbinger
12:40	39	Thermal analysis and optimization of a supercritical CO_2 Brayton cycle connected to a central tower solar collector. *Jesus A. Moctezuma Hernandez, Judit García-Ferrero, Rosa. P. Merchán and J.M. M. Roco*
13:00	495	Ground-based study on PIV system of combustion science experimental system. *Yu Fang, Xianzhang Peng, Huilong Zheng, Xiaofang Yang and Xiaowu Zhang*
13:20	487	A stochastic optimisation approach for the integration of PV systems with electric heat pumps and energy storage in buildings. *Andreas V. Olympios, Matthias Mersch, Fanourios Kourougianni, Antonio M. Pantaleo, Marko Aunedi, Christos N. Markides and George E. Georghiou*
13:40	374	Integrating concentrated solar power and molten carbonate electrolysis. *Giovanni Cinti, Gabriele Discepoli, Arianna Baldinelli and Jaroslaw Milewski*

		4H Buildings III
		Chair: Andreas Athienitis, Co-chair: Manon Everaert
12:40	377	Energy simulations of an existing villa converted into a nZEB Building: a case study. *Luís Barreiros Martins, Ana Cristina Ferreira, Bernardino Pinto, Pedro Gonçalves, Nelson Rodrigues, José C.F. Teixeira and Senhorinha Teixeira*
13:00	527	Energy transition buildings: a representative case study of refurbished single household shifted to full electric utilities combined with PV, wind and battery storage. *Daniele Fiaschi and Claudio Zuffi*
13:20	434	Retro-commissioning of a university building and estimated savings using energy simulations. *Farzan Kazemifar and Emaan Haider*
13:40	410	Is Europe REDI4Heat? Recent updates on the RED implementation for heating and cooling. *Rosa Christodoulaki, Irene Koronaki, Saverio Papa, Frank Gerard and Vassiliki Drosou*

14:00		**Lunch**

		4I Methane, methanol, ammonia
		Chair: Silvio de Oliveira Junior, Co-chair: Jorge Renzo Castillo Paz
15:30	234	From carbon dioxide to methane via crystallized hydrogen carbonate. *Friedrich Waag and Christoph Wieland*
15:50	231	Performance improvement of ammonia production from hydrogen throughexergy analysis. *Niccolò Farsi, Giampaolo Manfrida, Serena Ranieri, Pietro Ungar and Valentina Veltroni*
16:10	295	Circular thermoeconomics applied to a green ammonia synthesis plant: future production scenarios and alternative byproducts. *Alessandro Lima, Cesár Torres and Antonio Valero*

16:30	414	Integration of biodigestion, gasification, renewable energy, reversible solid oxide cell and CO_2 management strategies for sustainable natural gas production. *Meire Ellen Gorete Ribeiro Domingos, Daniel Alexander Florez Orrego, Saria Sfeir and François Maréchal*
16:50	475	Optimal design and operation of a green ammonia production plant considering multi-electrolyzer operation. *Bingqian Liu and François Maréchal*

		4J Heat exchangers
		Chair: Tryfon Roumpedakis, Co-chair: Amalia Steinchaouer
15:30	430	Numerical simulations of a novel electrical heated brick firing kiln. *Manuel Schieder, Julian Unterluggauer, Stefan Puskas and Stefan Vogt*
15:50	246	Heat exchanger network design and optimization for waterborne solid oxide fuel cell cogeneration system. *Eduardo Antonio Pina, Shivom Sharma, Amogh Amladi, Theo Woudstra, Purushothaman V. Aravind, François Maréchal and Jan van Herle*
16:10	254	Irreversibility associated with heat transfer and fluid friction in laminar flows in various heat exchanger geometries with constant exchange performance. *Shuxin Zheng, Jean-Henry Ferrasse and Olivier Boutin*
16:30	276	Constructal optimizations of supercritical carbon dioxide printed circuit heat exchanger based on cost and efficiency. *Zhihui Xie, Daoguang Lin, Kun Xi, Xiangkun Ji, Zhuoqun Lu and Yanlin Ge*
16:50	493	Optimizing the design of an ORC air-cooled condenser for industrial waste heat recovery: a trade-off between power consumption and required face area. *Ludwig Irrgang, Christopher Schifflechner, Maximilian Ammerer, Michel Beaughon, Konstantinos Braimakis, Sotirios Karellas, Aldo Serafino, Trond Andresen and Hartmut Spliethoff*

		4K Heat pumps and cooling systems II
		Chair: Konstantinos Braimakis, Co-chair: Corre Soline
15:30	505	Performance investigation of a hybrid small scale reversible heat pump coupled with an adsorption chiller. *Antonios Charalampidis, Tryfon Roumpedakis, Nikolaos Sarantopoulos and Sotirios Karellas*
15:50	510	High-temperature heat pumps for geothermal applications in Africa: Thermodynamic, Economic and Environmental evaluation. *Claudio Zuffi, Daniele Fiaschi and Filippo Ramundi*
16:10	589	Experimental campaign on non-fluorinated mixtures in a low-charge heat pump. Part 2: Exergy analysis. *Matteo Caramaschi, Jonas Jensen and Brian Elmegaard*
16:30	609	Performance and predictive analysis of a very high-temperature industrial heat pump. *Kim Högnabba, Tor-Martin Tveit and Ron Zevenhoven*
16:50	379	Flexibility potential of heat pumps through demand side management in buildings. *Agostino Gambarotta, Mirko Morini and Costanza Saletti*

		4L Environmental
		Chair: Ana María Blanco Marigorta, Co-chair: Ana Momcilovic
15:30	34	The mediating impact of proactive environmental management on energy choices in MENA firms. *Omar Ayouni and Zouiri Lahboub*
15:50	73	Life cycle assessment methodology application for energy generation alternatives in district heating and cooling networks: a case study for Bucharest. *Camila Andrea Puentes Bejarano, Javier Pérez Rodríguez, Juan Manuel de Andrés Almeida and Alberto Abánades*
16:10	407	Optimizing sustainability: A comprehensive life cycle assessment of secondary steel integration for enhanced environmental performance in geothermal heat generation. *Hannah Uhrmann, Lena Eckelmann, Marco Griesbach, Florian Heberle and Dieter Brüggemann*
16:30	570	Analysis of the environmental impact of fuel hydrotreating through life cycle assessment and process data. *Giovanni Morales and Edinson Berbesí*
16:50	560	Thermo-Ecological evaluation of energy accumulation systems integrated with renewable energy sources. *Piotr Mendrela, Wojciech Stanek and Tomasz Simla*
17:10		**Coffee Break/Refreshments**
		4M Water treatment / desalination
		Chair: Dimitrios Manolakos, Co-chair: Alexandra Welp
17:40	453	Exergy analysis for desalination processes. Application to an integrated MSF-MED system. *Nenna El Kori, Ana María Blanco Marigorta and Noemi Melián Martel*
18:00	4	Design and analysis of a novel renewable desalination system for a sustainable future. *Du Wen and François Maréchal*
18:20	257	A new CFD-based approach to design water purification devices. *Edoardo Sech, Anna Stoppato and Alberto Benato*
18:40	272	Waste heat utilization in solar-driven multi-stage membrane distillation devices for non-interrupted seawater desalination. *Primož Poredoš, Jintong Gao, He Shan, Zhenyuan Xu, Ruzhu Wang, Eva Zavrl, Tej Žižak and Ciril Arkar*
19:00	375	Renewable energy supply for waste water treatment plant aeration: A techno-economic analysis of different technology options. *Levin Matz, Astrid Bensmann and Richard Hanke-Rauschenbach*
		4N Exergy-based methods and applications II
		Chair: Lydia Stougie, Co-chair: Hyunkyo Yu
17:40	404	Impact of component performance on the Allam cycle efficiency: an exergy analysis. *Gnandjuet Gaston Brice Dago, Guido Francesco Frate, Andrea Baccioli, Lorenzo Ferrari, Emanuela Alfarano and Alessandro Colnago*

18:00	395	Exergy cost analysis of biochemical energy conversion processes: The productive structure of glucose breakdown in a living cell. *Assal Selma, Mauro Reini, Francesca Malfatti and Michele Giani*
18:20	422	The Hess-Murray law versus the "3/4-law": The "optimal" radius ratio in natural bi- and trifurcated vessels; a rejoinder, based on dimensional analysis. *Asfaw Beyene and Enrico Sciubba*
18:40	152	Exergy efficiency as a key performance indicator to rank advanced active technologies at district level. *Daniel Favrat*
19:00	224	A general approach to compare A-CAES by exergetic analysis considering the real gas behavior of air. *Markus Hadam and Marcus Budt*

		4O Heat transfer
		Chair: Amalia Steinchaouer, Co-chair: Sergio Rech
17:40	65	Impact of high cooling rate (quenching) on water supercooling. *Jawad Rabbi, Gholamhossein Kahid Baseri, José Luiz Lara Cruz, Magnus Rotan, Ragnhild Sæterli, Jorge Salgado Beceiro, Fride Vullum-Bruer, Alexis Sevault and Jean-Pierre Bedecarrats*
18:00	312	Numerical analysis of polymeric heatsinks. *Lourenço Bastos, Ângelo Marques, Bruno Vale, Ricardo Fretas, Susana Silva, Anibal Portinha, Pedro Bernardo, Gustavo Dias and Filipa Carneiro*
18:20	313	Numerical study of wick heat pipe performance with alternative materials for material-constrained applications. *Mohammad Mustafa Ghafurian, Brian Elmegaard, Peter Weinberger and Ahmad Arabkoohsar*
18:40	455	Augmenting boiling characteristics of the solar cavity receiver for enhanced steam generation. *Inbaoli A, Sujith Kumar C S, Sandesh S. Chougule and Christos N. Markides*
19:00	497	Analysis of temperature distributions in the germicidal chamber supported by light-illuminated metallic nanoparticles using CFD equations and thermal cameras. *Piotr Radomski, Dominik Kreft, Aimad Koulali, Iuliia Mukha, Luciano De Sio, Dariusz Mikielewicz and Paweł Ziółkowski*

		4P Wind energy
		Chair: Magnus Genrup, Co-chair: Inga Beyers
17:40	50	Feasibility study on the use of large-scale lithium-ion batteries to prevent energy wastes due to curtailments in offshore wind farms. *Riccardo Travaglini, Francesco Superchi, Francesco Lanni, Laura Serri and Alessandro Bianchini*
18:00	60	Comprehensive study on floating offshore wind potentialoff the Irish coast. *Krzysztof Szczepaniec, Fergal O'Rourke and Peter Ryan*
18:20	311	A hybrid alternatives analysis of an offshore wind installation in the Mediterranean sea: how pivotal are the technological aspects? *Claudio Moscoloni, Carola Chicco, Enrico Giglio, Giuseppe Giorgi and Giuliana Mattiazzo*
18:40	153	Enhancing renewable energy stability: A statistical study on hybrid system strategies based wind energy in Power-to-X technology. *Byungjun Kim, Young Duk Lee and Tetyana Morozyuk*
19:00		