Friday 5/7/2024

		5A Energy transition, sustainability & environmental aspects
		Chair: Enrico Sciubba, Co-chair: Tobias Wolf
9:00	577	EULiST BIP courses: Transformative education for sustainable campuses in Europe . *Sotirios Karellas and Irene Koronaki*
9:20	399	Marineclimate technology research trend analysis and technology level evaluation for five major countries. *Kyung-Ran Choi and Seungseob Euh*
9:40	473	Enhancing biogas plants through Power-to-X integration for efficient hydrogen and e-fuel production. *Alberto Alamia and Gorm Bruun Andresen*
10:00	316	Validation of exergy as a tool for a holistic assessment of the environmental impacts of agricultural processes. *Barbara Palacino, Sonia Ascaso, Antonio Valero and Alicia Valero*
10:20	444	Techno-economic analysis of a photovoltaic-thermal solar collector system for sustainable energy provision in hotel facilities. *Theodoros Papingiotis, George Orfanos, Petros Dalavouras, Irene Koronaki, George Antoneas and Dimitrios N. Korres*

		5B Storage VI
		Chair: Konstantinos Kyprianidis, Co-chair: Joanna D'Antoni
9:00	479	The HEATSEP method to maximize the efficiency of pumped thermal energy storage. *Sergio Rech, Piero Danieli, Gianluca Carraro and Andrea Lazzaretto*
9:20	491	Data center energy optimization: Evaluating the benefits of sensible thermal energy storage in diverse climates. *Attila Sulyok, Fabian Bühler, Brian Elmegaard and Nasrin Arjomand Kermani*
9:40	494	Data-driven modeling of borehole thermal energy storage (BTES) for operational optimization of renewable heat production systems. *Franziska Krenzlin, Willem Hagemann, Hannes Gernandt and Johannes Schiffer*
10:00	548	Thermodynamic modelling and economic comparison of diabatic compressed air energy storage configurations for different charging/discharging duration ratios. *Konstantinos Braimakis, Haris Avgerinou, Tryfon Roumpedakis and Sotirios Karellas*
10:20	552	Staging determination for metal-based thermochemical storage systems. *Israel Marqués Valderrama, Ricardo Chacartegui Ramírez, José Antonio Becerra Villanueva, Diego Antonio Rodríguez Pastor and Abraham Marqués Valderrama*

		5C Energy flexibility / Grid stability /Energy forecasting
		Chair: Dimitrios Rakopoulos, Co-chair: Asmae Boubkari
9:00	113	An analysis of EU power system flexibility: storage capacity needs under increasing variable renewable energy sources (VRES) penetration. *Luca Migliari, Davide Micheletto, Matteo Marchionni, Mario Petrollese, Giorgio Cau and Daniele Cocco*

9:20	426	Prediction of energy demand intervals for robust optimal operation of energy supply systems. *Ryohei Yokoyama, Yu Okawa, Shu Yoshida and Tetsuya Wakui*
9:40	244	Energy flexibility from industrial supply systems based on different optimization horizons – an application to a German manufacturing industry. *Johannes Lipka, Lukas Höttecke, Paul Stursberg, Michael Metzger, Hans Jörg Heger and Stefan Niessen*
10:00	406	Balancing the reliability and cost of energy systems under grid and component failures through Pareto-optimal storage operation. *Benedict Brosius, Dustin Frings, Benedikt Nilges and Niklas von der Assen*
10:20	58	Enhancing renewable energy forecasting for hybrid power stations: A data-driven approach. *Francesco Superchi, Antonis Moustakis, George Pechivanoglou and Alessandro Bianchini*

		5D - Buildings IV
		Chair: Elisa Moretti, Co-chair: Sergio Tomasinelli
9:00	36	Numerical analysis of the effect of a low-emissivity surface material on indoor thermal environment and human body exergy balance of a room with floor radiant heating system during winter season. *Hideo Asada, Yasuei Yamada and Chih-Wei Hu*
9:20	110	Data-driven machine learning models for complex building energy load predictions: analysis and assessment of concept drift scenarios. *Kai Derzsi, Florian Stinner, Matthias Fenske, Thomas Schreiber and Dirk Müller*
9:40	222	Co-designing policy and technology packages to decarbonize the Swiss building sector. *Arnau Aliana, Georgios Mavromatidis and Christof Knoeri*
10:00	253	Radiator fault detection in a multi-energy source building using unsupervised learning techniques. *Nima Monghasemi, Amir Vadiee, Stavros Vouros and Konstantinos Kyprianidis*
10:20	423	Multi-objective genetic algorithm optimization of energy efficiency measurs in a single family house building in Greece. *Konstantinos Braimakis, Dimitrios Ioannidis, Panagiotis Rigopoulos, Platon Pallis and Sotirios Karellas*

10:40		**Coffee Break/Refreshments**

		5E Energy market / Economics
		Chair: Adriano Scicovelli, Co-chair: Alessandra Ghilardi
11:00	128	Impact of reference electricity market selection for real-time electricity tariffs on emissions associated with operations: A case study of an inland port terminal. *Lennart Schürmann*
11:20	155	Marginal cost analysis applied to complex polygeneration systems: Case study of an Italian energy community. *Ronelly José De Souza, Luis María Serra de Renobales, Miguel Ángel Lozano, Mauro Reini, Emanuele Nadalon and Melchiorre Casisi*
11:40	333	Evaluating economic value of urban forest: Households' willingness to pay in South Korea. *Subin Choi and Seung Seob Euh*

12:00	342	Integration of sorbent-based direct air capture into combined heat and power plants under energy market uncertainty. *Tharun Roshan Kumar, Sina Hoseinpoori, Johanna Beiron, Simon Harvey, Henrik Thunman, David Pallarès Tella and Filip Johnsson*
12:20	557	Flexible techno-economic assessment tool for optimal electrolysis-RES coupling. *Nikolaos Skordoulias and Sotirios Karellas*
12:40	411	Evaluation of thermoeconomic diagrams and methodologies for cost allocation in a simultaneous heating and cooling heat pump system. *Rodrigo Guedes dos Santos, Miguel Ángel Lozano, Luis María Serra, Atílio Barbosa Lourenço, Pedro Rosseto de Faria and José Joaquim C. S. Santos*

		5F Optimization
		Chair: Lorenzo Ferrari, Co-chair: Manuel Schieder
11:00	543	Geometry optimization for high energy dissipation applied to electronic equipment. *Miguel S. Nuñez-Aguayo, Alan Cerroblanco-Ortiz, Victor A. Paramo-Ramírez, Abel Hernandez-Guerrero and J. Luis Luviano-Ortiz*
11:20	10	Environmental and techno-economic optimization of geothermal ORC for medium enthalpy resources using artificial neural networks and considering the long-term performance of the reservoir. *Spiros Gkousis, Konstantinos Braimakis, Philippe Nimmegeers, Sotirios Karellas and Tine Compernolle*
11:40	424	Comparison of 1-D ejector modelling approach and computational fluid dynamics (CFD) simulation to predict the performance of ejector devices. *Nikolaos Karkalos, Konstantinos Braimakis, Angelos Markopoulos, Aris-Dimitrios Leontaritis and Sotirios Karellas*
12:00	555	Investigation of heat network optimization modeling: resulst for a residential district fosusing roof utilization, main heat generation and scenario uncertainty. *Christoph Goetschkes and Sonja Witkowski*
12:20	116	Design and optimization of a geothermal energy storage feeding a fully renewable district heating network. *Natalia Kozlowska, Pierre Dewallef, Vincent Lemort and Aitor Cendoya*
12:40	305	Assessing the potential for power generation from low-grade waste heat: Integration of an organic Rankine cycle with an absorption heat transformer. *Mohammad Hossein Nabat, Soheil Khosravi, Hamid Reza Rahbari, Brian Elmegaard and Ahmad Arabkoohsar*

		5G Power plants and thermal processes
		Chair: Giampaolo Manfrida, Co-chair: Dareen Dardor
11:00	35	Evaluation of a combined cycle in the Pecém II power plant. *Vinicius Soares and Waldyr Gallo*
11:20	249	Analytical-approximation mathematical model of a 500 MW class CCGT unit for simulation and prediction applications. *Paweł Trawiński and Krzysztof Badyda*
11:40	291	Optimization of an Agrawal heat engine by means of the saving functions. *Juan Carlos Pacheco-Paez, Ricardo Teodoro Páez-Hernández, Juan Carlos Chimal-Eguia and Delfino Ladino-Luna*
12:00	2	Polygeneration of Ppower and methanol from biogenic residues. A techno-economic-assessment. *Andreas Hanel, Carlos Alemán, Sebastian Fendt and Hartmut Spliethoff*

12:20	544	Equation-oriented framework for natural gas Allam cycle-based power system design and optimization. *Yingzong Liang, Honghua Xu, Xianglong Luo, Jianyong Chen, Zhi Yang and Ying Chen*
12:40	285	4E analysis applied to a biorefinery design of sugarcane ethanol plant coupled to autotrophic cultivation of microalgae in Brazil. Sergio Luiz Pinto Castiñeiras-Filho and Florian Pradelle

		5H Biomass / Biofuels
		Chair: Jurgen Karl, Co-chair: Elisa Corbean
11:00	53	Approach to predict chemical exergy and syngas yield in Brazilian biomass waste gasification using an artificial neural network. *Gabriel Gomes Vargas and Silvio de Oliveira Junior*
11:20	178	CFD study of the volatile yield effect on plasma-assisted biomass gasification in a vertical entrained-flow gasifier. *Robert Lewtak, Sebastian Bastek, Sebastian Fendt, Jonas Brandstetter, Johannes Waßmuth, Kentaro Umeki, Andrius Tamosiunas and Hartmut Spliethoff*
11:40	247	Production of biofuel and energy carriers for the energy transition: a comprehensive evaluation of process integration for high-quality fuels production. *Matteo Baldelli, Lorenzo Bartolucci, Stefano Cordiner, Emanuele De Maina and Vincenzo Mulone*
12:00	569	Biomass pyrolysis: thermodynamic parameters review and determination through TGA. *Joanna D'Antoni, Amine Ben-Abdelwahed, Wahbi Jomaa and Jean Lachaud*
12:20	565	Structural, conductive, and electrochemical properties of carbon-based bio-composites formed by mechano-synthesis. *Asfaw Beyene and Andrii Hrubiak*
12:40	562	A thermochemical conversion process with high electricity input for biojet production: environmental and technical assessments. *Pablo Silva Ortiz, Daniel Florez Orrego, Lasse Røngaard Clausen, François Maréchal and Agnes Jocher*

13:00		**Lunch**

		5I Industrial decarbonization III
		Chair: Asfaw Beyene, Co-chair: Pablo Silva Ortiz
14:30	28	A mini-review of industrial waste sources, efficiency enhancement techniques, and heat upgrade solutions with an emphasis on thermochemical processes. *Evangelos Bellos, Christos Sammoutos, Panagiotis Lykas, Angeliki Kitsopoulou, Ahmad Arabkoohsar, Christos Tzivanidis and Ioannis Alexopoulos*
14:50	386	Comparative analysis of biomass utilization routes in industrial and district heating systems: integration of an aluminium industry and an urban agglomeration. *Daniel Flórez-Orrego, Lorenzo Aimone, Dareen Dardor, Reginald Germanier and François Maréchal*

15:10	392	Potential application of the european SUSHEAT project concept to the decarbonization of industrial heat demand: preliminary results of WP2. *José Daniel Marcos, Rubén Barbero, Antonio Rovira, Iman Golpour, Richard Law, Silvia Trevisan and Rafael Guedez*
15:30	320	Investigation of the feasibility of PV roof for fish factories in Norway, Prima Protein case study.*Said Bentouba, Peter Breuhaus, Mohammad Mansouri and Steinar Aamodt*
		5J Industrial decarbonization IV
		Chair: Abel Hernandez-Guerrero, Co-chair: Amadeo Ceruti
14:30	170	Supercritical CO_2 heat pump as an innovative solution for industrial applications above 150°C. *Ali Mojtahed, Gianluigi Lo Basso, Lorenzo Mario Pastore, Antonio Sgaramella and Livio de Santoli*
14:50	111	Energy and cost evaluation of four conventional pistachio dryers. *Majid Dowlati, Iman Golpour, Mortaza Aghbashlo, Ana M. Blanco Marigorta and J. Daniel Marcos*
15:10	29	Thermodynamic analysis of a solar-driven absorption heat transformer for industrial process heat. *Evangelos Bellos, Panagiotis Lykas, Angeliki Kitsopoulou, Christos Sammoutos, Ioannis Alexopoulos, Ahmad Arabkoohsar and Christos Tzivanidis*
15:30	186	Waste-heat-to-cool for passenger ships. experimental testing under realistic operation and optimised control of an adsorption chiller prototype. *Valeria Palomba, Antonino Bonanno, Andrea Frazzica, Fabio Costa, Davide La Rosa, Giovanni Brunaccini and Ralph Herrmann*
		5K Energy and exergy case studies
		Chair: Eden Mamut, Co-chair: Silvia Garlatti
14:30	245	Exergy analysis of a complex, multi-species evolutionary history in an isolated ecological niche. *Federico Zullo and Enrico Sciubba*
14:50	235	Techno-economic analysis of rooftop photovoltaic-thermal collectors' installations in residential energy communities. *Adedamola Shobo, Raul Saez, Youssef Elomari, Dieter Boer and Manel Valles*
15:10	517	Exploring the thermodynamic foundations of human aging: A comprehensive analysis of metabolic behavioural models in relation to physical activity and longevity. *Aiman Rashid, Pietro Ungar and Daniele Fiaschi*
15:30	445	A Deep Dive into Energy Storage Alternatives. *Fatemeh Rostami, Youssef Elomari, Laureano Jiménez and Carlos Pozo*
15:50		**Coffee break/Refreshments**
16:10		**Closing Ceremony**
16:30		
16:50		