15th International Conference on Sustainable Energy & Environmental Protection **SEEP2023** **25th – 28th July 2023** **Hamilton Conference Centre** **Brunel University London, Kingston Lane, Uxbridge, UB8 3PH, UK**		
Day 1- 25th July		
Newton Room		
08:00 – 09:15 **Registration**		
Opening Session **Conference Chairs:** **Prof. Abdul Ghani Olabi** **Prof. Hussam Jouhara** **Prof. John Dear**		
09:30– 09:40	**Welcome talk by** Professor Geoffrey Rodgers, Pro Vice Chancellor - Enterprise and Employment of Brunel University London	
	Introduction to SEEP Professor Abdul Ghani Olabi, Director of Sustainable Energy and Power Systems Research Centre, University of Sharjah	
09:40 – 10:20	**Keynote by** Prof. Damià Barceló Director of IDAEA-CSIC, Spain. Editor in Chief of STOTEN, GREEAC, Methods X, CSCEE, and C ESH, and book series: CAC, ACP and HEC.	*"Sewage Protein Information Mining in wastewater-Based Epidemiology (SPIM-WBE): Discovery of Large Biomolecules as Biomarkers of Public Health and Industrial Activities"*
	Keynote by	

10:20 – 11:00	*Prof. Ibrahim Dincer* Professor at Ontario Tech University President of the Hydrogen Technologies Association	*"Sustainable Energy and Environmental Protection with Hydrogen and Energy Storage Options"*
11:00 - 11:30	Coffee Break	
11:30 – 12:00	**Keynote by** Prof. Julija Kirsiene Vice-Rector for Research at Vytautas Magnus University	"*Interdisciplinary Innovation as a Commitment to Region's Resilience Facing the Energy and Other Crises: VMU experience*"
12:00 - 12:30	**Keynote by** Prof. Simone Mancin Professor of Mechanical Engineering at the University of Padova	*"The role of latent thermal energy storage in the decarbonization: the lesson learnt from few grams ppt to tons of PCM"*
12:30 – 13:00	**Invited Speaker** Mr. Ben Kaube CEO, Cassyni	"The future of research seminars"
13:00 - 14:00	Lunch	

Symposium on Water closed loop in industrial processes

25th July 2023

Session A1
Newton Room
Chairperson: Prof. Luca Montorsi

14:00 – 14:20	Jurgita Malinauskaite	Wastewater reuse in the EU and Italy: policies, barriers and good practices
14:20 – 14:40	Federico Ferrari	Low-temperature waste heat upgrade and reuse in the ceramic sector.
14:40 -15:00	Robertas Poskas	Impact of the humidified air inlet temperature and Re number on the processes in a condensing heat exchanger
15:00 - 15:20		

"Environmental Issues"

25th July 2023

Session B1
Cavendish Room
Chairperson Prof. Lorna Anguilano

14:00 – 14:20	Blaž Luin	Optimization of shipping routes with AIS data
14:20 – 14:40	Christoph Pfeifer	Techno-economic evaluation of biogas production from olive mill waste and cattle manure – A case study
14:40 -15:00	Zahid Hassan	Enhancing Blue/Green Infrastructure for Resilient Urban Environments: Smart Solutions and Nature-Based Strategies
14:40 -15:00	David Sawtell	Degradation of water based pollutants by microfluidic plasma devices

	Fouad Al-Mansour	Assessment of industrial excess heat potential in Slovenia	15:00 – 15:20	Christoph Pfeifer	Carbonized biogenic residues for cost-reduced carbon dioxide capture
15:20 – 15:40	Coffee Break				

Session A2 Newton Room Chairperson: Prof. Luca Montorsi		
15:40- 16:00	Hussam Jouhara	Multi-sink Heat Pipe Heat Exchanger for the Steel Industry
16:00 – 16:15	Les Norman	Engineering Belief – Numbers with Stories
16:15 - 16:30	Nina Kossinska	Hydrothermal co-carbonization as a potential method of utilizing digested sludge and screenings from wastewater treatment plants towards energy application
16:30- 16:45	Heba Ghazal	Experimental study of new heat pipe shelves towards energy performance improvement in open refrigerated display cabinet

Session B2: Hydrogen & Fuel Cell Cavendish Room Chairperson Prof. César Nieto-Londoño		
15:40- 16:00	Mohammad Ali Abdelkareem; A.G.Olabi	Standalone CuO dendrites as an efficient catalyst for urea electrolysis
16:00 – 16:20	Zheng Wang	The deployment priority study of wind and solar power in China at a fine scale
16:20 - 16:40	Bo Bai	Integrating Solar Electricity into a Fossil Fuelled System
16:40- 17:00	Amani Al-Othman	Novel Self-Cleaning Coatings based on Zirconium Phosphates for Solar Panels

16:45 – 17:00	César Nieto-Londoño	Numerical Assessment of Methane-Hydrogen-Air Mixtures Combustion at Micro-Scale Conditions	17:00 – 17:20	Parth Prajapati	Energy-exergy-economic-environmental (4E) analysis and multi objective optimization of a cascade refrigeration system
17:00 – 17:15	José Luis Torres-Madroñero	Multi-Objective Optimization of Hybrid Renewable Energy Systems for Colombian Non-interconnected Zones	17:20 – 17:40	Fabrizia Devito	Sustainability of Additive Manufacturing Processes Innovations, for Renewable Energy Parts: a systematic patent review
17:15 – 17:30	Loic Bartomeus	Investigation of the potential of using torrefaction for the processing of multi-layer package waste	17:40 – 18:00	Farwah Yasin	Growth response of wheat and rice to application of Phosphorus based nanocoated-fertilizer
17:30 – 17:45	Yomna Samir Abdallaa	An investigation on treating wastewater using algae			
17:45 – 18:00	Daniel Dias	Rainfall harvesting in EU industrial sites under climate change context: simple method for assessment of potentialities for 2050			
Closing Day 1 @ Award Presentation of Best Paper					

Sustainable Steam Symposium

Newton Room

Day 2

26th July 2023

Session A3

Symposium Chair Dr. Julien Porre

09:00 - 09:10	Welcome Talk by: Dr. Julien Porre Applied research manager at Spirax Sarco
09:10 - 9:20	Welcome Talk by: Tim Kraemer
Sustainable Steam Symposium Session Chair: Dr. Julien Porre	
09:20 -09:50	Keynote By

"Environmental Issues"

Cavendish Room

Day 2

26th July 2023

Session B3

Chairperson Prof. Jurgita Malinauskaite

09:00 – 09:30	Keynote by: Prof. AbdulNaser Sayma Professor of Energy Engineering, the Head of Department of Engineering at City, University of London	"How can combined heat and power using small gas turbines contribute to net-zero targets"
09:30 – 09:50	Laurence Stamford	A Life Cycle Environmental Perspective for Improved Sustainability in LNG Strategies
09:50 – 10:10	Shamraiz Ahmad	Greenhouse gas emissions and energy

	Dave Forte Head of Strategic Account Management at Spirax Sarco	
09:50 – 10:10	Mark Sadler (SXS)	Approach to decarbonise steam generation
10:10– 10:30	David Tian (SXS CN)	Steam System Modeling and Simulation in Dymola to Support Sustainability
10:30 – 11:00	Coffee Break	

		consumption for glass production in Pakistan
10:10 – 10:30	Damiana Chinese	Industrial Waste Heat Recovery Collaborations Through 4th Generation District Heating: A Decision Support Tool

Session A4 Newton Room **Chaired by: Dr. Julien Porre**		
11:00- 11:20	Radek Mojsak (SXS)	Steam Dryness Control Flow Line - products performance validation by testing

Session B4: Hydrogen & BioEnergy Cavendish Room Chairperson Prof. Abdul Hai Al-ALami		
11:00 – 1:30	**Keynote by** Prof. Rytis Skominas Director Of Bioeconomy Research Institute at the Vytautas Magnus University	"Climate change impact on durability of concrete"
11:30- 11:50	Sang-Chul Jung	Simultaneous production of high-purity hydrogen and nano-carbon from waste benzene by liquid-phase plasma cracking on

11:20 – 11:40	Michael Agolom (SXS)	Enhancement of steam boiler efficiency using innovative TDS control system based novel Microwave TDS sensor
11:40 - 12:00	Vitaliy Sechenyh (SXS)	Acoustic nonintrusive monitoring of thermodynamic steam traps.
12:00- 12:20	Francis Deterville (SXS)	Lessons Learned in Thermal Design and Validation for High-Temperature Environments: A Case Study
12:20 – 12:40	Piyush Lakhani (SXS)	Different aspects of management of a steam-based thermal storage – Steam Battery™
12:40 – 13:00	Sulaiman Almahmoud (SXS)	Performance investigation of a trilateral flash cycle system for low grade waste heat recovery
13:00 - 14:00	Lunch	

		modified perovskite catalysts
11:50 – 12:10	Aloyzas Gaudutis	An Investigation of Physical-Mechanical Properties of Experimental Organic Granular Fertilizers From Biochar and Poultry Manure
12:10 - 12:30	Asma Khasawneh, Fares Almomani	Hydrogen Production: A Cooling Tower Integrated with Electrolysis Station
12:30- 12:50	Mohammad Tawalbeh	A facile method to prepare deep eutectic solvent-assisted alginate electrolyte biomembrane for fuel cell application
12:50 – 13:10	Zeshan Sheikh	Effect of Photosynthetic and Mechanical Aeration on the Performance of Microbial Fuel Cell

Session A5 Newton Room Chaired by: Dr. Julien Porre Dr. Sulaiman Almahmoud		
14:00-14:30	**Keynote** by Federico Miguel Halle Business Development Manager at Spirax Sarco	
14:30 – 14:50	Martin Pihl Andersen (DTU)	Steam generation by heat pumps – economic potential and practical challenges
14:50 – 15:10	Andy Joynson (Caldera)	Trialling & piloting industrial steam from thermal stores
15:10 – 15:30	Matt Candy (Steamology)	The journey to zero emission steam
15:30 - 16:00	Coffee Break	

Session B5: Hybrid Energy Systems Cavendish Room Chairperson. Prof. Fadi Jouhra		
14:00-14:30	Keynote by: Prof. Christoph Pfeifer professor at the University of Natural Resources and Life Sciences, Vienna (BOKU).	"Negative emissions with bioenergy"
14:30 – 14:50	Linas Jurevičius, Raimundas Baublys	Environmentally sustainable operation of a large hydropower plant reservoir: current practices, challenges, and opportunities
14:50 – 15:10	Abdullah Al-Badi	Techno-Economic Feasibility Analysis of Hybrid System for Al Hallaniyat Island
15:10 – 15:30	Mehdi Neshat	Hybrid Convolutional Recurrent Deep Learning Model for Predicting Wave Farms Power Output: Case Studies from Australian Coasts

Session A6 Newton Room Chaired by: Dr. Julien Porre		
16:00-16:20	Ashaleigh Robinson (SXS)	Boiler electrification for sustainable steam generation
16:20-18:00	**Panel discussion** **Chaired by: Dr. Julien Porre**	

Session B6 Cavendish Room Chairman: Prof. Mohammad Ali Abdelkareem		
16:00 – 16:20	Letitia Petrescu	Techno-environmental assessment of methanol production using chemical looping technologies
16:20 – 16:40	Owais Ur Rehman Khan	Antecedents and Consequences of Willingness to Pay for Sustainable Procurement in Business-To-Business Context
16:40 – 17:00	Abdul Hai Al-Alami	3D printed retrofits for compressed air energy storage pneumatic generators
17:00 –17:20	Carlos Vargas and Dácil Díaz	Optimizing Photovoltaic Power Plant Forecasting Using a Genetic Algorithm-Based Artificial Neural Network
17:20 – 17:40	OULHACI Dalila	Valorisation des bouteilles en plastique pour le traitement de l'eau épurée réutilisée pour l'irrigation
17:40 -18:00	Sarah Benharkat	Post Occupancy Evaluation of luminous environment in algerian university classrooms

Closing Day 2 @ Award Presentation of Best Paper		
19:00 – 22:00 Conference Dinner **Newton Room**		
Day 3 **27th July 2023** **3rd Special IMechE Greater London Region Symposium** **Newton Room**		
09:00 – 09:10	Welcome Talk by the Symposium Chairman Prof. Helen James OBE Chair of the IMechE Education and Skills Strategy Board	
9:10 – 9:50	**Keynote Address:** Mr Martin Robinson IMechE	"The Need for Sustainable Energy and Environmental Protection on a growing Global Population"
9:50 – 10:30	**Keynote Speaker:** Prof. Alistair McIlhagger	"A sustainable future in advanced materials"

	OBE Chair of the IMechE Education and Skills Strategy Board	
10:30 -11:00	**Keynote Speaker:** Charles Clarke CEO Those Engineers Ltd	” Developments in Aerospace”
11:00 - 11:30	Coffee Break	

3rd Special IMechE Greater London Region Symposium

Session A7

Newton Room

27th July 2023

Chairman Mr Martin Robinson

11:30- 11:45	Richard Brooks	Internal Damage in CFRPs after Multiple Low-velocity Impacts

Session B7: “Renewable Energy”

Cavendish Room

27th July 2023

Chairperson Dr Fouad Al-Mansour

11:30 – 12:00	Amani Al-Othman	Collagen-based proton conducting membranes for high-temperature

						PEM fuel cells applications
11:45 - 12:00	Qusay Doraghi	Computational Analysis and Experimental Validation of a Thermoelectric Generator		12:00 – 12:20	Jihoo Kim	An Augmented Available Transfer Capability Evaluation for Transmission Systems with High Wind Power Penetrations
12:00 – 12:15	Ehsan Baniasadi	4E Analysis-Based Comparison Of Waste Heat Recovery Cycles Integrated With Steel Annealing Furnace Considering Energy Storage		12:20 – 12:40	A.G. Olabi; M.A. Abdelkareem	MXene doped graphene as promising catalyst for hydrogen production from saline water
12:15 – 12:30	Xiao Yan	Nanocarbon Materials for energy conversion and storage				
12:30 – 12:45	Hiroyuki Miyoshi	Formulae for flow resistance of a 5-sided duct with no-slip and shear-free edges		12:40 – 13:00	Solui Yu	An Enhanced Critical Operating Constraint Forecasting (COCF) for Power Grids with Large Scale Wind Generating Resources
12:45 -13:00	Alina Żabnieńska-Góra	High-temperature heat pumps: fundamentals, modelling approaches and applications				
13:00 – 14:00	Lunch					

Session A8: Newton Room Chairman Mr Martin Robinson		
14:00 – 14:15	Hirak Kansara	Inverse design and additive manufacturing of shape-morphing structures based on functionally graded composites
14:15 – 14:30	Angeli Todd	Remediation of Water Contaminated with 17α-ethinylestradiol Using a Novel Composite of TiO2-hydroxyapatite Coated Hollow Glass Microspheres
14:30 - 14:45	Magdi Rashad	Solar PV Optimization
14:45- 15:00	Valentina Olabi	Supply chain resilience of hydrogen in the GCC region
15:00 – 15:15	Aghyad B. Al Tahhan	Enhancing Thermal management of Lithium-ion batteries using hybrid air and liquid cooling
15:15 – 15:30	Soumaya Griraa	Exploring green hydrogen generation through green algae

Session B8: Energy & Economy Cavendish Room Chairperson Prof. Mohammad Ramadan		
14:00-14:20	Shuhao Zhang	Energy and Economic Analysis of Integration of Proton Exchange Membrane Electrolysis, Ground Sources Heat Pump with Natural Gas Depressurisation
14:20 – 14:40	Hala J. El-Khozondar	Utilizing on Grid Renewable Energy Power System for Gaza Strip
14:40 - 15:00	Bo Bai	Efficiency assessment of photovoltaic poverty alleviation project in China
15:00-15:20	Justinas Anušauskas	Energy and Environmental Assessment of Spring Barley Fertilization Technologies
15:20 – 15:40	Shuo Sun	Methane emission of production and abandoned coalmines in China, 2001-2060

15:30 - 16:00	Coffee Break						
Session A9 Newton Room Chairman Mr Martin Robinson				**Session B9: Hybrid Energy Systems Cavendish Room Chairperson Dr Fouad Al-Mansour**			
16:00-16:15	Emilio Felipe Gomez Ulloa	Numerical modelling and testing of a protective structure for battery packs		16:00-16:30	Keynote by: Prof. Luca Montorsi professor at the University of Modena and Reggio Emilia	"The Role of Numerical Simulation into Energy Intensive Industries"	
16:15 -16:30	Qaisar Abbas	Nickel/Cobalt Oxides and Nickel/Cobalt Binary Oxides Based Electrodes for High Specific Energy Pseudo-Supercapacitors		16:30 – 16:50	Ijaz Ul Mohsin	Post-Lithium Battery Safety Studies by Calorimetric and Thermal Measurements	
				16:50 – 17:10	Haitao Zhang	Numerical investigation of combustion characteristics and NOx emission of jet flame in vitiated coflow	
16:30 – 16:45	Mehwish Khan Mahek	Enhancing Thermal Efficiency of Cylindrical Lithium-Ion Battery Pack: A Comprehensive Analysis of an Air-Cooling System with Bionic Surface Structure		17:10 – 17:30	Oguzhan Kazaz	Numerical Analysis of Latent Functional Thermal Fluid with Nano-Enhanced Phase Change Material Capsules in Solar Collectors	
				17:30 – 17:50	Kamran Phdiese	Spatio-temporal Assessment of Land Use Land Cover Changes and population dynamics Using Geoinformatics: a	

						case study of Mardan, Khyber Pakhtunkhwa, Pakistan
16:45 – 17:00	Muhammad-Adil Abbasi	The Application of NiCo MOF for Supercapcitor		17:50 - 18:10	Imran Hashmi	Assessment of indoor air quality and sick building syndrome in medical center of University
				18:10 – 18:30	Houria Smail	Modulation strategy of cascaded inverters
17:00 - 18:00	IMechE Judges Meeting & Consultation					
Closing Day 3@ IMechE Award for the best 3 Presentations						
Barbeque & Social IMechE Event						

Day 4 **Poster Session** **Newton Room** 09:00 – 11:00	
Muhammad Tawalbeh	Zeolites and zeolitic MOF-based membranes for polymer electrolyte membrane (PEM) fuel cells
Muhammad Tawalbeh	Zirconium silicate/Lignin based proton exchange membranes for high-temperature PEM fuel cells applications
Amani Al-Othman	A Review of Optimization Techniques for PEM Fuel Cells: Towards Enhanced Performance and Efficiency

Selfa Johnson Zwalnan	Assessment of the effect of building materials on indoor comfort and energy demand of residential buildings in Jos: An experimental and numerical approach
Leonard Kabeya Mukeba Yakasham	Simulation and Modeling of Access to Consumable Energy by Women in Rural Areas in the Face of Resilience to Climate Change in Africa by Yakam Matrix
Williams Okunsebor	Public-Private Partnerships to finance green hydrogen FPSO
Rajan Sharma	Bioconversion of Lignocellulosic Biomass to Biogas
Mona Albatarni, Zineb Bouabidi, Mary A. Katebah, Mohamed M. Hussein, Easa I. Al-musleh, Fares Almomani	Intensifying cryogenic processes with reduced efforts while extracting valuable insights
Zainab Elkhahlout & Fares Almomani	The application and use of Nanotechnology in energy storage system
Fares Almomani	Adsorption of doxorubicin hydrochloride on silica coated Fe3O4 magnetic nanoparticles as promising nanocarriers for drug delivery
Sadia Fida	Surface Modification of Pretreated Carrier Media for Improved Properties in Biological Wastewater Treatment Systems
AIT ABBAS Hamou	Robust Intelligent Control of the Wind Turbine Nonlinear Systems Using RBF Neural Network Based on K-means Clustering
Tamer Abdellatief	Supporting a more sustainable future for producing environmental gasoline biofuel based on lemon peel oil
Enas Taha Sayed	Hydrogen production from seawater: challenges and promising techniques to solve
Adnan Alashkar	Improving the stability of perovskite materials through passivation with ionic liquids

Montaser Mahmoud	Advances in shallow geothermal energy systems
Mohamad Ayoub	Experimental Evaluation of Compressed Air Propelled Abra for Maritime Transportation
Aasim Ahmed Abdelghafar Ali	Dye-synthesized solar cells: Advances, challenges and barriers
Adnan Alashkar	Improving the stability of perovskite materials through passivation with ionic liquids
Ayman Mdallal	Floating Photovoltaics: Technology Overview, challenges and Barriers
Oguzhan Kazaz	Investigation of Coconut Oil based Phase Change Material Balls in Solar Thermal Energy Storage Applications
11:00	**Remarks & Conference Closing Session**