



Smart Sustainable Technologies

Sustainable Design and Manufacturing (SDM-26)

Sustainability in Energy and Buildings (SEB-26)

Conference Programme



8-10 July 2026

Chania, Crete, Greece

Contents

Chairs' Welcome	1
SDM-26.....	6
Organisation.....	6
International Programme Committee	7
SEB-26	8
Organisation.....	8
International Programme Committee	9
Keynote Talks	11
From Products to Systems: Symbiotic Pathways to Circular Economy	11
Being a Sustainability Activator in the green transition	13
Building-to-Urban Climate, Health and Resilience through Human Adaptation and Innovative Mitigation Solutions.....	15
Looking back at 10 years of creating low-carbon homes in Wales - and looking forward.....	17
Sustainability and digitalisation of manufacturing	18
From Water Efficiency to Investable ESG Value: Optimising Water-Energy- Carbon Systems at Asset Level	20
Timetable – Wednesday 8 July	22
Timetable – Thursday 9 July.....	24
Timetable – Friday 10 July	26
SDM Paper Presentations	28
SDM-01: IS06: Intelligent Manufacturing and Sustainable Process Modelling and Optimization	28
SDM-02: IS03: Regenerative manufacturing and design	29
SDM-03: IS01: People Led Systems Approaches to Net Zero	30
SDM-04: G01: Design for Circular Economy and Sustainable Manufacturing Systems & IS04: Innovation for Sustainable, Circular and Symbiotic Transformations	31
SDM-05: G02: Materials challenges for sustainability & IS02: Sustainable Innovation within Markets and Businesses	32

SDM-06: IS06: Intelligent Manufacturing and Sustainable Process Modelling and Optimization - B.....	33
SEB Paper Presentations.....	34
SEB-01: G01-A: Sustainable and Resilient Buildings	34
SEB-02: G02-A: Sustainable Energy Technologies	35
SEB-03: IS01-A: Implementing net-zero technologies in buildings and construction	36
SEB-04: G01-B: Sustainable and Resilient Buildings	37
SEB-05: G03: Workshop on Innovation in Sustainable Agriculture and Food Production	38
SEB-06: IS02-A: Sustainable Urbanisation for Resilient Territories: Integrating Low Energy and Low Carbon Strategies	39
SEB-07: IS03: Advanced HVAC Systems and Innovative Strategies for Thermal Comfort and Energy Efficiency in Buildings & IS04: Waste-to- Energy Innovations for Urban Sustainability	40
SEB-08: G01-C: Sustainable and Resilient Buildings	41

Chairs' Welcome

13th International Conference on Sustainable Design and Manufacturing SDM-26

On behalf of the organizers of SDM-26 and the esteemed KES community, it is our distinct privilege to extend a heartfelt welcome to you all for the 13th International Conference on Sustainable Design and Manufacturing (SDM-26). This prestigious event will take place in the beautiful old Venetian port city of Chania, Crete, Greece from July 8th to 11th, 2026, and it will also be accessible online via the well-established KES Online platform, offered by KES International.

The first SDM conference was held in Cardiff in 2014 and since then the world has changed dramatically in its understanding of the challenges of sustainability and why, with the impact on Climate Change literally being felt. I'm sitting in the UK writing this and the temperature is set to rise to over 38°C, a "once in a 100-year event" – except this will have happened three times in the last ten years when SDM was last in Chania in April 2016. 8 of the 10 warmest years in UK history have occurred in since 2002 and 38°C has been reached in 2003, 2019, 2020 and 2022.

We have returned to Chania in 2026 with a revised programme in the general tracks to incorporate the issues that are core to SDM; Design for Circularity and Materials Challenges. We have also incorporated 7 invited sessions covering a fantastic range of topics from Systems and People Led Approaches to Net Zero, Sustainable Innovation, Symbiotic Transformations, Reverse Engineering for the Circular Economy, Intelligent Design and Process Modelling and the really new area of Regenerative Manufacturing and Design.

These sessions encompass both the theoretical foundations and practical applications of sustainable design and manufacturing; the conference offers a superb forum for the dissemination and deliberation of novel insights and concepts. It serves as a fertile ground for the exchange of knowledge and the incubation of ground-breaking ideas.

This year I have managed to persuade three internationally recognised experts to give Keynote Lectures. Prof Fazleena Badurdeen for the Institute of Sustainable Manufacturing (ISM), at the University of Kentucky, Lexington, USA. Fazleena will present on her work *"From Products to Systems: Symbiotic Pathways to Circular Economy"*, which will pick up on the ideas she has been researching on linking length scales of circularity. Dr Sharon Jackson, Founder and Managing Director of the European Sustainability Academy (ESA), will talk about *"Being a Sustainability Activator in the green transition"*. Sharon will talk about the journey taken in Crete since 2011 with challenges and impacts of working within Cretan society, to literally build a green building using local und sustainable methods. During the conference, attendees will

visit the ESA to see the green building as well experience the potential for living sustainably in Crete with a meal sourced only from locally produced food. Our 3rd keynote speaker is Prof Konstantinos Salonitis, Professor of Advanced Manufacturing at University College Dublin, Ireland and Centre Director of the I-Form Advanced Manufacturing Centre funded by Research Ireland and involving 9 Irish universities. Kostas will talk on *“Sustainability and digitalisation of manufacturing”*, a topic this conference has grappled with over the last decade so it will be fascinating to hear his views.

We really appreciate the time and commitment our keynote speakers put in to presenting their insights, experiences and thought leadership as well as their and willingness to share with our conference attendees.

The meticulous selection of conference submissions involved a rigorous blind peer-review process, drawing upon the expertise of esteemed reviewers within the manufacturing and design community. Only the most outstanding submissions have been chosen for presentation at the conference and inclusion in the proceedings, which will be published as a distinguished volume in the KES-Springer series 'Smart Innovation, Systems and Technologies.'

Our heartfelt gratitude goes out to our admired authors, diligent reviewers, and the rigorous efforts of our general track and invited session chairs, as well as all others who have played an integral role in shaping this esteemed event. Your contributions have been instrumental in ensuring the excellence of SDM-26.

We extend a warm welcome to the KES SDM community and sincerely hope that your participation in this conference proves to be both enriching and enjoyable.

Professor Mark Jolly, Professor of Sustainable Materials and Manufacturing, University of Greenwich, UK

On behalf of my colleagues:

Prof. Robert Howlett, 'Aurel Vlaicu' University of Arad, Romania and Bournemouth University, UK

Prof. Rossi Setchi, Cardiff University, UK

SDM-26 Conference Chairs

18th International Conference on Sustainability in Energy and Buildings SEB-26

The 18th International Conference on Sustainability and Energy in Buildings 2026 (SEB-26) is a significant international conference organised by a partnership between KES International, The Sustainable and Resilient Built Environment research group, Cardiff Metropolitan University, and The Technical University of Crete, Greece.

SEB-26 invited contributions on a range of topics related to sustainable and resilient buildings and sustainable energy technologies. Latterly focused on renewable energy technologies and smart and micro grids. Contributions addressed building, or neighbourhood, or city and/or country scales, specific to local, national and global challenges. Building on the success from SEB-25, SEB26 included the second workshop on Innovation in Sustainable Agriculture and Food Production.

The aim of the conference was to bring together University researchers, Government and Scientific experts and Industry professionals and stakeholders to discuss the minimisation of energy use, costs and associated carbon emissions in buildings, neighbourhoods, cities in the urban context and rurally; from theoretical, practical, and implementation perspectives – driving societal impact. The conference which was held from the 7th to 10th July 2026, formed an exciting chance to present, interact, network and learn about the latest research, innovative and practical developments and knowledge transfer on the subjects with real world impact.

SEB-26 will be held in a hybrid form with mainly physical attendance, with a small number of delegates attending in hybrid mode in response to agile work patterns and an environmentally sustainable ethos.

The conference featured three General Tracks chaired by experts in the fields:

G01 Sustainable & Resilient Buildings

G02 Sustainable Energy Technologies

G03 Workshop on Innovation in Sustainable Agriculture and Food Production

In addition, there were four Invited Tracks proposed, organised by prominent researchers and practitioners.

IS01: Implementing net-zero technologies in buildings and construction.

IS02: Sustainable Urbanisation for Resilient Territories: Integrating Low Energy and Low Carbon Strategies.

IS03: Advanced HVAC Systems and Innovative Strategies for Thermal Comfort and Energy Efficiency in Buildings.

IS04: Waste-to-Energy Innovations for Urban Sustainability.

On the evening of the 7th of July, a welcome drinks reception and early registration was held at the conference venue. This provided an opportunity for delegates to meet each other, KES International, the SEB26 General Chair, and the General and Invited Track Chairs, ahead of the conference opening on the 8th of July. Following the first day of the conference a visit was organised to the European Sustainability Academy (ESA) for an evening hosted by the founder Sharon Jackson, to learn about the ethos which is bringing the best academic research to inform practical business action with a strong emphasis on action learning. The evening concluded by ESA's resident astronomer illustrating the night sky and stars.

It is important that a conference provides high quality presentations from world leading impactful researchers and practitioners. SEB-26 featured three keynote speakers: Professor Anna-Laura Pisello from the Università degli Studi di Perugia, Italy; Dr Geraldine Seguela, Cardiff Metropolitan University, Wales, UK; and Elfed Roberts, Codi Group, UK.

The conference attracted submissions from around the world. Submissions for the Full-Paper Tracks were subjected to a two-stage blind peer-review process. With the objective of producing a high-quality impactful conference, only the best of these papers was selected for presentation at the conference and publication as book chapters in a volume of Springer's book series: The Smart Innovation, Systems and Technologies.

Thanks are due to the very many people who have given their time and goodwill freely to make SEB-26 a success. We would like to thank the local chair from the Technical University of Crete, Greece. Furthermore, we are grateful to the time of members of the International Programme Committee who were essential in providing their reviews of the conference papers, to ensure appropriate high quality of papers was maintained. We thank the high-profile keynote speakers for providing interesting talks to inform delegates and provoke discussion. Important contributors to the conference were made by the authors, presenters, and delegates without whom the conference could not have taken place, so we offer them our thanks. Finally, we would like to thank the Executive team and administrative staff of KES International.

It is hoped that delegates find the SEB-26 conference an interesting, informative, and useful experience; and remain connected through the KES International Virtual Conference Experience.

Prof John Littlewood, Cardiff Metropolitan University, Wales, UK

Prof Denia Kolokotsa, Technical University of Crete, Greece

Prof Robert J. Howlett, 'Aurel Vlaicu' University of Arad, Romania and Cardiff Metropolitan University, Wales, UK

Prof Lakhmi Jain, University of Technology Sydney, Australia and Liverpool Hope University, UK
SEB-26 Conference Chairs

SDM-26

Organisation

Honorary Chairs:

Rossi Setchi, Cardiff University, UK

Steffen G Scholz, Karlsruhe Institute of Technology KIT, Germany

Executive Academic Chair:

Robert Howlett, KES International Research & Cardiff Metropolitan University, Wales, UK

Executive Chair:

Jonathan Flearmoy, KES International, UK

General Chair:

Mark Jolly, University of Greenwich, UK

International Programme Committee

Name	Affiliation
Prof. Emmanuel Adamides	University of Patras, Greece
Prof. Peter Ball	York University, UK
Dr. Debajyoti Bhaduri	Cardiff University, UK
Prof. Nadia Bhuiyan	Concordia University
Prof. Leszek Borzemski	Wroclaw University of Technology
Prof. Giampaolo Campana	University of Bologna
Prof. Kai Cheng	Brunel University
Prof. Ahmed Elkaseer	The British University in Egypt
Dr. Daniel Eysers	Cardiff University
Dr Susan Evans	Hong Kong Polytechnic University, Hong Kong
Dr. Hassiba Fadli	Anglia Ruskin University
Prof. Antonio Gagliano	University of Catania
Prof. Takamichi Hosoda	Aoyama Gakuin University
Prof. Haihong Huang	Hefei University of Technology
Dr. Luisa Huaccho Huatuco	University of York, UK
Prof. Winifred Ijomah	University of Strathclyde
Prof. Giuseppe Ingarao	University of Palermo
Prof. I.S. Jawahir	University of Kentucky
Prof. Stefan Junk	University of Applied Sciences Offenburg
Prof. Minna Lammi	Anglia Ruskin University
Dr. Chi Hieu Le	University of Greenwich
Dr. Soon Chong Johnson Lim	Universiti Teknologi MARA, Malaysia
Prof. Jillian MacBryde	University of Strathclyde
Ms Alessia Mevoli	Anglia Ruskin University
Dr. Baris Ordek	Tampere University, Finland
Dr. Michael Packianather	Cardiff University
Dr. Emanuele Pagone	Cranfield University
Prof. Paolo Priarone	Politecnico di Torino
Prof. Caterina Rizzi	DIGIP university of Bergamo
Dr. Atul Sagade	Renewable Energy Innovation and Research Foundation, Pandharpur, Maharashtra
Dr. Konstantinos Salonitis	Cranfield University
Dr. Steffen G Scholz	Karlsruhe Institute of Technology
Dr. Yagmur Atescan Yuksek	Sustainable Manufacturing Systems Centre, Faculty of Engineering and Applied Science, Cranfield University
Prof. Zhinan Zhang	Shanghai Jiao Tong University

SEB-26

Organisation

Honorary Chairs

Lakhmi C Jain, KES International, UK & University of Piraeus, Athens, Greece

Robert J Howlett, KES International Research & Cardiff Metropolitan University, Wales, UK

Executive Chair

Jonathan Flearmoy, KES International, UK

General Chair

John Littlewood, Cardiff Metropolitan University, Wales, UK

Programme Chair

Alfonso Capozzoli, Politecnico di Torino, Italy

Local Conference Chair

Denia Kolokotsa, Technical University of Crete, Greece

International Programme Committee

Name	Affiliation
Prof. Mohamed Abbas	UDES/CDER, Algeria
Prof. Abdel Ghani Aissaoui	University of Bechar, Algeria
Dr. Mahmood Alam	University of Brighton, UK
Dr. Martin Anda	Murdoch University, Australia
Prof. Omar Asfour	King Fahd University of Petroleum & Minerals, Saudi Arabia
Dr. Touraj Ashrafian	Northumbria University, UK
Dr. Ahmad Taher Azar	Prince Sultan University, Saudi Arabia.
Assoc. Prof. Jiping Bai	University of South Wales, Australia
Dr. Gabriele Bernardini	Università Politecnica delle Marche
Dr. Trevor Butler	Earth Tubes, Canada
Dr. Marta Chinnici	ENEA, Italy
Prof. Vincenzo Costanzo	University of Catania, Italy
Asst. Prof. João Pedro Couto	Department of Civil Engineering, University of Minho, Portugal
Asst. Prof. Diana D'Agostino	University of Naples Federico II, Italy
Prof. Youssef Errami	Chouaib Doukkali University, Eljadida, Morocco
Prof. Najib Essounbouli	Université de Reims Champagne Ardenne, France
Prof. Gianpiero Evola	University of Catania, Italy
Dr. Fátima Farinha	Universidade do Algarve, Portugal
Dr. Elisa Di Giuseppe	Università Politecnica delle Marche, Italy
Dr. Francesco Guarino	Università degli Studi di Palermo, Italy
Prof. Larisa Ivascu	Polytechnic University of Timisoara, Romania
Prof. Hirech Kamal	Mohammed Premier University, Morocco
Prof. Mohanlal Kolhe	University of Agder, Norway
Prof. Denia Kolokotsa	Technical University of Crete, Greece
Dr. Arianna Latini	Università Politecnica delle Marche, Italy
Dr. John Littlewood	Cardiff Metropolitan University, UK
Dr. Alessandro Lo Faro	University of Catania, Italy
Dr. Eva Maleviti	Aviation and Aerospace Sustainability at Embry-Riddle Aeronautical University, USA.
Dr. Gilda Massa	ENEA, Italy
Prof. Francesco Minichiello	University of Naples Federico II, Italy
Dr. Pablo Daniel Benitez Mongelos	Universidad Nacional de Itapúa (UNI), Paraguay
Prof. Michele Morganti	Sapienza University of Rome, Italy
Dr. Benedetto Nastasi	Sapienza University of Rome, Italy

Name	Affiliation
Dr. Marialena Nikolopoulou	Kent School of Architecture, UK
Prof. Francesco Nocera	DIEEI – University of Catania, Italy
Dr. Paul Osmond	University of New South Wales, Australia
Dr Marco Picco	University of Lancashire, UK
Dr. Fabiana Silvero Prieto	National University of Itapua, Paraguay
Prof. Federica Rosso	Sapienza University of Rome, Italy
Dr. Atul Sagade	Department of Mechanical Engineering, University of Tarapacá, Arica, Chile
Prof. Harjit Singh	Brunel University, UK
Prof. Horia-Nicolai Teodorescu	Technical University of Iasi, Romania
Dr. Cristina Ventura	University of Catania, Italy
Prof. Romeu Vicente	Department of Civil Engineering, University of Aveiro, Portugal
Dr. Simon Walters	University of Brighton, UK
Mrs Marianne Wiik	SINTEF, Norway

Keynote Talks

Prof. Fazleena Badurdeen

University of Kentucky, USA

From Products to Systems: Symbiotic Pathways to Circular Economy

Abstract: Despite the growing prominence of circular economy research as a systems-level paradigm, theoretical clarity is still lacking regarding how circularity emerges and propagates across different scales of analysis. This presentation advances the argument that product-level circularity constitutes the foundational nucleus of circular systems, while symbiosis functions as the critical relational mechanism that enables circularity to scale beyond individual products. Building on and synthesizing research in product circularity attributes, standards-driven metric formalization, systems-based frameworks, and multi-generational product design, the talk presents a multi-level conceptualization linking micro-, meso-, and macro-level circularity. At the micro level, critical product attributes and design decisions define the feasibility of high-value circular pathways. At the meso level, industrial symbiosis enables coordinated exchanges of materials, components, services, and data across value networks. At the macro level, standards, policies, and enabling infrastructures provide the conditions for scaling and governance. This presentation elaborates how symbiotic relationships link product design, value networks, and system enablers to reinforce that circular economy is not an aggregate of circular practices, but an emergent property of symbiotic interactions grounded in product design. In conclusion, the implications for researchers, designers, and policymakers seeking to move from isolated circular products toward genuinely systemic circular economy outcomes will be discussed.



Biography: Fazleena Badurdeen is an internationally recognized leader in sustainable manufacturing, circular economy, and advanced manufacturing systems, with more than two decades of experience spanning academia, industry collaboration, and global professional leadership. She is the Earl Parker Robinson Chair Professor in the Department of Mechanical and Aerospace Engineering at the University of Kentucky, where she also serves as Director of the Manufacturing Systems Graduate

Certificate Program and as a core faculty member of the Institute for Sustainable Manufacturing.

Prof. Badurdeen's research focuses on advancing sustainability and circularity across product, process, and system levels. Her work integrates sustainable and circular product design, metrics and measurement systems for sustainability evaluation, smart

and digital manufacturing, and modeling and analysis of manufacturing systems and supply chains. She has led and contributed to externally funded research totaling nearly \$18 million from organizations including the National Science Foundation, Department of Energy, National Institute of Standards and Technology, U.S. Army, U.S. Air Force, and industry partners. Her research outcomes have influenced both academic scholarship and directly informed industrial practice, standards development, and workforce training initiatives. A central theme of her work is translating sustainability principles into practical, data-driven tools that support real-world design and manufacturing decisions.

A recognized scholar, Prof. Badurdeen has authored over 150 peer-reviewed publications, including journal articles, book chapters, and edited special issues, and is co-author of the forthcoming book *Design and Management of Sustainable Supply Chains* published by Cambridge University Press. Her work is widely cited, reflecting its impact on the fields of circular economy, sustainable manufacturing, lifecycle engineering, and supply chain systems. She currently serves as an editor for *Resources, Conservation and Recycling* and holds editorial board positions with several leading journals in manufacturing and industrial engineering.

Beyond academia, Prof. Badurdeen is a prominent leader in the global manufacturing community. She is a Fellow of the Institute of Industrial and Systems Engineers (IISE), has served as Technical Vice President of IISE, and is the founding Chair of the International Forum on Sustainable Manufacturing. Prof. Badurdeen received her PhD in Integrated (Industrial and Mechanical) Engineering and MS in Industrial Engineering, both from Ohio University, USA and holds an MBA from the Postgraduate Institute of Management, Sri Lanka. She received her BS in Engineering from the University of Peradeniya, Sri Lanka.

Dr Sharon Jackson

European Sustainability Academy (ESA), Greece

Being a Sustainability Activator in the green transition

Abstract: Through a social-sciences lens, this keynote supports the underlying objectives of the conference in terms of making transformational levels of change towards the socio-economic green transition which is vital for addressing climate chaos and society breakdowns across the globe. In her keynote speech, Sharon cautions against complacency that growing pressures for more sustainable practices, and the rise of new technology, will make the transition easy. She addresses well documented skills-gaps and emerging demands for different skills in the future of work.

With a horizon-scan of the 2050 workplace, Sharon presents research insights into the increasing demand for enhanced 'soft skills', such as, improved sensemaking and sense-giving skills, sharpened stakeholder communications and shared language as a substrate of successful project collaboration.

With a focus on how impactful sustainability activation happens, and the enablers for transference of research ideology and technology solutions for scalable, practical solutions with continuity potential, whilst managing human levels of interest and engagement which are essential for a successful green transition.

Sharon draws from her rich life-experiences in Crete, over 15 years, since designing and building a 400m², solar powered, fully off-grid, natural materials, purpose designed, sustainability management and leadership teaching centre (ESA), with consistent net-zero operating objectives and locally sourced services, in a small, rural, hilltop village. She shares her story of how, as a British woman, she gained community acceptance and the support of diverse stakeholders at a time when Greece was experiencing a decade of extreme economic crisis, and a time when the concept of sustainability was not understood, and often ridiculed and reviled.

Sharon shares key findings from her research and publications about how people make sense of the value of 'green buildings', about unconscious 'talk act gaps' and how influences below the iceberg 'waterline' can stall sustainability change ambitions, even when the research, design and technology are robust.



Biography: Sharon is the founder and Managing Director of the European Sustainability Academy (ESA) Crete. She is also Associate Faculty at Cranfield School of Management, Associate Scholar at University of Cumbria and Visiting Research Fellow at Athens University of Economics and Business. She has held a Non-Executive Director role with Global Sustain, Athens, since 2015.

Sharon is a hybrid, sustainability leadership academic and an entrepreneur, with a robust grounding in global business. Sharon was awarded her first

Executive Board appointment in her 20s and worked for 15 years in senior roles in the global electrical / electronic component sector. She has worked with energy, mining, oil and gas, aluminium and paper production sectors.

In 2000, she re-trained as an adult in HE teacher in business and leadership, followed by a research MSc in leading, learning and change and PhD on sensemaking about sustainability in organisations.

Before setting up ESA in Crete in 2011, she taught and consulted in sustainability leadership and business strategy in Australia, China for 10 years, including with BP, BHP Billiton and Hydro Tasmania. She contributed to Australian government policy in the early years of business adoption of sustainability principles and CSR/ TBL reporting.

Currently, her work includes L7 Senior Leader Apprenticeship Tutoring, and Masters in Sustainability supervision at Cranfield University and consulting to the Chartered Management Institute (CMI), London about the future demand for green management skills in UK industry.

ESA has won several awards for excellence in sustainability business education, most recently, 2025, Prestige Global Awards, London for 'Sustainability Education Provider of the year'.

Sharon contributes to the EU Pact for Skills partnership to develop workplace, VET knowledge, skills and behaviours development for driving the green transition. ESA most recent led an EU Erasmus+ international consortium project (2024/25) for designing and piloting new competency teaching frameworks for 'Upskilling Generation Net Zero'.

Prof Anna Laura Pisello
University of Perugia, Italy

Building-to-Urban Climate, Health and Resilience through Human Adaptation and Innovative Mitigation Solutions

Abstract: Climate change and urbanization are intensifying overheating risks across cities worldwide, with significant implications for human health, wellbeing, energy demand, and environmental resilience. Addressing these challenges requires moving beyond technology-centered approaches towards human-centric frameworks capable of integrating environmental monitoring, citizen engagement, behavioral adaptation, and innovative mitigation solutions.

This keynote presents recent advances in the development of multisensory and human-centered urban environments as living laboratories for understanding and improving the interactions between people, buildings, and urban climate. Through the integration of environmental sensing, physiological monitoring, data analytics, digital modeling, and citizen science approaches, urban spaces can become platforms for co-generating knowledge and supporting adaptive responses to climate-related stressors. The same stressors may be mostly mitigated by passive cooling solutions in urban heat islands, therefore particular attention is then devoted to the role of radiative cooling materials and innovative technologies. The presentation highlights how the effectiveness of radiative cooling and other passive mitigation strategies should be evaluated not only through physical and energy-performance indicators, but also through their impacts on human perception, physiological responses, comfort, wellbeing, and adaptive behavior. Examples from European and international research projects demonstrate how citizen-centered monitoring, participatory assessment, wearable sensing technologies, and community engagement can support the large-scale implementation and societal acceptance. By bridging building physics, urban

climate science, advanced materials, environmental health, and citizen science, the talk proposes a new paradigm for climate adaptation: one in which innovative mitigation technologies and human adaptation processes are jointly designed to foster healthier, more resilient, and climate-responsive cities.



Biography: Anna Laura Pisello is Full Professor of Building Physics and Energy Systems at the University of Perugia (Italy), where she founded and leads EAPLAB - Environmental Applied Physics Laboratory. She coordinates the PhD Programme in Energy and Sustainable Development, serves as Deputy to the

Rector's Delegate for Doctoral Studies, and is Vice President of ITATEC - the Italian Academy for Engineering and Technology.

After earning her PhD in Energy Engineering in 2013, she conducted research at Columbia University, Virginia Tech, and the City University of New York, and has been a Visiting Research Associate at Princeton University since 2018.

Prof. Pisello has authored more than 250 peer-reviewed publications, received over 10 international scientific awards, and was recognized as Best Editor of the Year 2023 by Solar Energy. She currently leads several European research initiatives, including an ERC Starting Grant (HELIOS) and its ERC Proof of Concept, focused on novel radiative cooling technologies for climate-resilient buildings and cities.

Her research integrates advanced materials, building-to-urban climate dynamics, human-centered environmental design, and sustainable energy solutions to address urban overheating, climate adaptation, environmental wellbeing, and resilience in the built environment.

Elfed Roberts
Codi, Wales, UK

Looking back at 10 years of creating low-carbon homes in Wales - and looking forward

Abstract: Elfed Roberts of Codi will provide an illustrated talk covering Codi's experiences of developing new low carbon homes in Wales; from the original project of 16 homes in 2016 through to the latest projects in Cardiff, Swansea and Newport which showcase the most advanced ideas being put into practice. Elfed will also explain the lessons learned from these projects along with evidence of what the data and residents are saying about the lived experience. Finally, Elfed will explain Codi's Strategy for New Homes 2025-2028, which is based upon the projects completed over the past decade, whilst ensuring that Codi are also prepared for the challenges that lay ahead...

Biography: Elfed Roberts is Head of Sustainability and Innovation at Codi, Wales's largest Housing Association, with over 25,000 affordable homes in South and West Wales. Codi also builds around 900 new homes a year, and Elfed is responsible for shaping and driving forward Codi's approach to decarbonising new homes and making them more sustainable and energy efficient.

With a background as an architect, Elfed also has over 30 years' experience in housing development, sustainable design, planning, urban regeneration, and traditional buildings.

Prof. Konstantinos Salonitis

Cranfield University, UK

Sustainability and digitalisation of manufacturing

Abstract: The twin transitions of sustainability and digitalisation are reshaping contemporary manufacturing systems, driven by increasing environmental pressures, resource constraints, and rapid technological advancement. This paper examines how digital technologies-such as the Internet of Things, artificial intelligence, big data analytics, and digital twins-enable more sustainable manufacturing practices across the product life cycle. By improving process transparency, energy efficiency, resource utilisation, and decision-making, digitalisation offers significant opportunities to reduce environmental impact while enhancing economic and operational performance. At the same time, the paper highlights key challenges associated with this transformation, including data integration, skills gaps, cybersecurity, and the environmental footprint of digital infrastructures themselves. Through a synthesis of current research and industrial examples, the study proposes a conceptual framework that links digital maturity with sustainability outcomes in manufacturing. The findings underline the need for a systemic and strategic approach to align digitalisation initiatives with sustainability goals, supporting manufacturers in achieving long-term competitiveness and resilience.



Biography: Professor Konstantinos (Kostas) Salonitis has served as Head of the Sustainable Manufacturing Systems Centre at Cranfield University since 2019. He is a trained Mechanical Engineer, having obtained his degree in 2001, and holds a PhD in Manufacturing Processes, awarded in 2006. His research expertise encompasses sustainable and resource-

efficient manufacturing, simulation and modelling of manufacturing processes, lean and green manufacturing management, and environmental impact assessment.

Prior to joining Cranfield University, Professor Salonitis worked as a Research Engineer at the University of Patras, where he contributed to several European Commission-funded research projects. He has participated in more than ten European Commission-funded projects, serving as both Project Manager and Technical Site Manager.

Professor Salonitis joined Cranfield University in February 2012 as a Lecturer in Manufacturing Systems and was promoted to Professor of Manufacturing Systems in October 2019. During his tenure at Cranfield, he has acted as Co-Investigator on four EPSRC-funded projects and two Horizon 2020 projects, served as Knowledge Transfer Partnership (KTP) Academic Supervisor for two projects, and led two ATI/Innovate UK-

funded projects as Principal Investigator. In addition, he has successfully delivered over 30 industrially funded research and consultancy projects. He was the deputy director of the UKRI-funded Transforming the foundation industries (TRANSFIRE) hub. Over the past decade, he has secured more than £15 million in research funding.

Professor Salonitis has authored over 350 peer-reviewed publications in leading international journals and refereed conferences and has written two academic books. He has supervised more than 30 doctoral students to successful completion.

He is a Chartered Engineer, a Fellow of the Institution of Mechanical Engineers (FIMechE), a Fellow of the Institution of Engineering and Technology (FIET), a Member of the Technical Chamber of Greece, and a Fellow of the Higher Education Academy (FHEA). He has previously served as Chair of the Manufacturing Industries Division of the IMechE and is a member of the Consortium of UK University Manufacturing and Engineering (COMEh).

Dr Geraldine Seguela

Cardiff Metropolitan University, Wales, UK

From Water Efficiency to Investable ESG Value: Optimising Water-Energy-Carbon Systems at Asset Level

Abstract: Water scarcity in arid regions is increasingly addressed through energy-intensive desalination, embedding water supply within carbon-intensive infrastructure systems. While non-potable water reuse is widely promoted as a sustainability strategy, its environmental and financial performance at asset level remains insufficiently understood. Existing ESG reporting frameworks largely rely on entity-level metrics and do not capture the infrastructure systems through which environmental risks arise.

This keynote presents empirical evidence from a large healthcare facility in Abu Dhabi to examine how water system configuration drives both greenhouse gas emissions and financial performance. Using multi-year operational data, the analysis integrates water demand, water source, onsite energy use (Scope 2), and embedded desalination emissions (Scope 3) within a boundary-consistent framework. Three configurations are evaluated: a fully desalinated baseline, an observed mixed system, and an optimised non-potable water system combining demand reduction and full source substitution. The results demonstrate that greenhouse gas intensity is governed primarily by water source and system configuration rather than volumetric water savings alone. While partial reuse delivers only marginal impact, full non-potable water substitution combined with system optimisation achieves significant decarbonisation and improved lifecycle financial performance.

The keynote introduces the Water-to-Carbon (W2C) metric as an asset-level indicator linking engineering performance to ESG value, demonstrating how infrastructure optimisation can translate environmental performance into decision-useful investment insight.

Biography: Dr Geraldine Seguela is an architectural engineer and researcher with over a decade of experience in sustainable infrastructure, specialising in water resource management, non-potable water reuse, and the water-energy-carbon nexus in arid and water-stressed environments. Her work bridges building services engineering, environmental performance measurement, and lifecycle cost analysis to understand how infrastructure systems generate both environmental impacts and financial exposure.

Her research is grounded in a long-term empirical programme at a large healthcare facility in Abu Dhabi, where she developed and tested integrated strategies combining soil enhancement, irrigation optimisation, and alternative water sourcing. This work demonstrated how system configuration, rather than water savings alone, drives both

greenhouse gas intensity and lifecycle financial performance in desalination-dependent contexts.

Her recent research extends into sustainable finance, where she develops asset-level environmental performance indicators, including the Water-to-Carbon (W2C) metric, to connect infrastructure engineering with ESG materiality, climate risk, and investment decision-making. Her work contributes to bridging the gap between physical system performance and sustainability disclosure frameworks, supporting more credible and decision-useful ESG reporting.

Timetable – Wednesday 8 July

	Plenary Room / Room 1	Room 2	Room 3
09:00 - 09:15 EEST	Opening Ceremony Prof. Robert J Howlett, KES International, UK & 'Aurel Vlaicu' University of Arad, Romania Prof. John Littlewood, Cardiff Metropolitan University, UK Prof. Mark Jolly, University of Greenwich, UK		
09:15 - 10:15 EEST	Keynote Speaker 1 Prof. Prof Anna Laura Pisello University of Perugia, Italy Talk Title: Building-to-Urban Climate, Health and Resilience through Human Adaptation and Innovative Mitigation Solutions		
10:15 - 10:45 EEST	Networking Break		

	Plenary Room / Room 1	Room 2	Room 3
10:45 - 12:45 EEST	SEB-01 G01-A: Sustainable & Resilient Buildings Prof. John Littlewood	SDM-01 IS06: Intelligent Manufacturing and Sustainable Process Modelling and Optimization Ahmed Elkaseer	SDM-03 & Workshop People Led Systems Approaches to Net Zero Jill Mcbryde
12:45 - 13:45 EEST	Lunch		
13:45 - 14:45 EEST	Keynote Speaker 2 Prof. Fazleena Badurdeen University of Kentucky, USA Talk Title: From Products to Systems: Symbiotic Pathways to Circular Economy		
14:45 - 15:15 EEST	Networking Break		
15:15 - 17:15 EEST	SEB-02 Sustainable Energy Technologies Dr. Simon Walters	SDM-02 IS03: Regenerative manufacturing and design Luisa Huatuco & Susan Evans	SEB-03 Implementing net-zero technologies in buildings and construction Marianne Wiik

Timetable – Thursday 9 July

	Plenary Room / Room 1	Room 2	Room 3
09:30 - 10:30 EEST	Keynote Speaker 3 Dr Geraldine Seguela Cardiff Metropolitan University, Wales, UK Talk Title: From Water Efficiency to Investable ESG Value: Optimising Water-Energy-Carbon Systems at Asset Level		
10:30 - 11:00 EEST	Networking Break		
11:00 - 13:00 EEST	SEB-04 Sustainable & Resilient Buildings Prof. John Littlewood	SEB-05 G03: Workshop on Innovation in Sustainable Agriculture and Food Production Prof Robert J. Howlett & Prof Giacomo Scarascia Mugnozza	SDM-05 G02: Materials challenges for sustainability & ISO2: Sustainable Innovation within Markets and Businesses Mark Jolly & Alessia Mevoli
13:00 - 14:00 EEST	Lunch Break		

	Plenary Room / Room 1	Room 2	Room 3
14:00 - 15:00 EEST	Keynote Speaker 4 Dr. Sharon Jackson European Sustainability Academy (ESA), Greece Talk Title: Being a Sustainability Activator in the green transition		
15:00 - 17:00 EEST	SEB-06 Sustainable Urbanisation for Resilient Territories: Integrating Low Energy and Low Carbon Strategies Dr. Francesco Guarino	SEB-07 Advanced HVAC Systems and Innovative Strategies for Thermal Comfort and Energy Efficiency in Buildings & Waste-to-Energy Innovations for Urban Sustainability Diana D'Agostino & Larisa Ivascu	SEB-08 Sustainable & Resilient Buildings Prof. John Littlewood
19:00 EEST	Gala Dinner		

Timetable – Friday 10 July

	Plenary Room / Room 1	Room 2	Room 3
09:00 - 10:00 EEST	Keynote Speaker 5 Prof. Konstantinos Salonitis Cranfield University, UK Talk Title: Sustainability and digitalisation of manufacturing		
10:00 - 10:30 EEST	Networking Break		
10:30 - 12:30 EEST	SDM-04 G01: Design for Circular Economy and Sustainable Manufacturing Systems & IS04: Innovation for Sustainable, Circular and Symbiotic Transformations Mark Jolly & Marco Bortolini	SDM-06 IS06: Intelligent Manufacturing and Sustainable Process Modelling and Optimization - B Ahmed Elkaseer	
12:30 - 13:30 EEST	Lunch Break		

	Plenary Room / Room 1	Room 2	Room 3
13:45 - 14:45 EEST	Keynote Speaker 6 Elfed Roberts Codi, Wales, UK Talk Title: Looking back at 10 years of creating low-carbon homes in Wales - and looking forward		
14:45 - 15:00 EEST	Closing Ceremony		

SDM Paper Presentations

SDM-01: IS06: Intelligent Manufacturing and Sustainable Process Modelling and Optimization

Chair: Ahmed Elkaseer

Wednesday 8 July: 10:45 -12:45

Room 2

Paper No	Paper Title / Authors
3	A Holistic Environmental-Economic Assessment Model for the Tyre Replacement Market in Germany Sebastian Schmitt, Marcel Meurer, Christoph Haag and Christian Malek
9	Design of an agentic LLM-based pipeline for circular economy applications: a tractor hood case study Christian Spreafico, Daniele Landi and Davide Russo
27	Assessment of a Vision Transformer-Based Approach for Cranial Implant Reconstruction Mahmoud Salem, Katja Nau and Ahmed Elkaseer
28	A CT-Derived Voxel-Based Computational Workflow for Patient-Specific Rib Implant Design with TPMS Lattice Optimization Hoda Abuzied, Serag Salem, Nourhan Zayed and Ahmed Elkaseer

SDM-02: IS03: Regenerative manufacturing and design

Chairs: Luisa Huatuco & Susan Evans

Wednesday 8 July: 15:15 - 17:15

Room 2

Paper No	Paper Title / Authors
5	Knowledge management in e-commerce short food supply chains in China and regenerative manufacturing Jin Chen, Luisa Huaccho Huatuco and Bob Doherty
12	Regenerative by codesign: An innovation design framework for Operations and Supply chains transformation, just equitable sustainability Susan Evans and Luisa Huaccho Huatuco
13	A regenerative design experiment Kumari Moothedath Chandran, Navudu Naga Aditya and Steve Evans
15	New consumption strategies critical for regenerative manufacturing and its design Susan Evans and Jiahao Wang
16	From Green to Regenerative Manufacturing: Reframing Design Contributions for Systemic Transition Xinyu Wang, Susan Evans, Jiahao Wang and Xihui Liu

SDM-03: IS01: People Led Systems Approaches to Net Zero

Chair: Jill MacBryde

Wednesday 8 July: 10:45 -12:45

Room 3

Paper No	Paper Title / Authors
14	Systems Approaches to Net-Zero Manufacturing in Saudi Arabia Serhan Shaman Alshammari, Ahmad Nayef Alsudairi and Ali Arif Alshammari
31	A People Led Skills Approach to Net Zero Adoption in the Advanced Manufacturing Innovation Landscape Jennifer Griffith, Kwaku Adu-Amankwa, Jushui Lai, Jose Hernandez and Andreas Reimer
32	Scottish heritage textile manufacturing: people led approaches to digital adoption and sustainability Jill MacBryde, Amy Mavroudis and Aylin Ates

SDM-04: G01: Design for Circular Economy and Sustainable Manufacturing Systems & IS04: Innovation for Sustainable, Circular and Symbiotic Transformations

Chairs: Mark Jolly & Marco Bortolini

Friday 10th July: 10:30 - 12:30

Plenary Room/Room 1

Paper No	Paper Title / Authors
1	From Optimisation to Decision-Making: A Digital Platform for Industrial Symbiosis Networks Marco Bortolini, Francesco Gabriele Galizia, Valentina Ventura, Cristian Cafarella and Cristina Mora
6	Supporting SME Decarbonisation through Innovation Ecosystems with a Function-Oriented Model Based on the CREDIT4CE Project Joanna Helman, Maria Rosienkiewicz, Mariusz Cholewa and Mateusz Molasy
21	Modular Design and Circular Product Attributes: A Bibliometric Co-occurrence Analysis Jennifer Dreier, Georg Jacobs and Frederik Moers
18	Driving circularity in textile business: Baltic region case Minna Lammi, Ruusa Ligthart, Jukka Ojasalo, Juliana Romero Montoya and Sabine Maselkowski
19	Consumer Attitudes toward Sustainable Products in Japan and China Edilson Ueda
30	From Fragmentation to Integration: A Conceptual Framework for Social Sustainability in Supply Chains Michele Ronchi, Cristian Cafarella, Francesco Gabriele Galizia, Marco Bortolini and Cristina Mora

SDM-05: G02: Materials challenges for sustainability & IS02: Sustainable Innovation within Markets and Businesses

Chairs: Mark Jolly & Alessia Mevoli

Thursday 9th July: 11:00 – 13:00

Room 3

Paper No	Paper Title / Authors
2	Sustainable lignin-based wood-polymer composites for large-scale additive manufacturing Artem Chystiakov, Osama Ziada and Janka Kovacikova
4	Reassessing aluminum recycling efficiency under compositional constraints Manuela Caspio, Giuseppe Ingarao and Fabrizio Micari
8	English language media portrayal of overtourism countermeasures in Japan Emily Mace, Katie L Leggett and William E Davies
17	Narratives of Sustainable Consumption in Niche Pet Care Markets: The case of reusable fleece bedding for guinea pigs Katie Leggett, Cassie Jones and William E Davies
23	Life Cycle Assessment of Natural Dye Spin-Dyeing as a Sustainable Alternative to Conventional Reactive Dyeing Yagmur Atescan Yuksek, Prithivi Boylla, Abimbola Oluwatayo Orisawayi, Sameer S. Rahatekar and Konstantinos Salonitis

SDM-06: IS06: Intelligent Manufacturing and Sustainable Process Modelling and Optimization - B

Chair: Ahmed Elkaseer

Friday 10 July: 10:30 - 12:30
Room 2

Paper No	Paper Title / Authors
26	Topology-Optimized TPMS Lattice Biomedical Implants Fabricated by Additive Manufacturing Yasmine El-Taybany and Ahmed Elkaseer
20	An Interface-based Geometry-Dependent Layer Height Model for 3D Inkjet Printing Karin Jia-Yin Chen, Huachen Wang, Katja Nau, Veit Hagenmeyer and Ahmed Elkaseer
22	Corrosion Performance of Laser Powder Bed Fusion Printed Samples for Biomedical Applications Tarek Elmeligy, May Abdel-Latif, Islam Al-Akraa, Mohammed Fawey, Wesam Sadek, Eman Zayed, Ahmed Shaker, Mohamed Abo El-Kassem, Fayez El-Hossary and Ahmed Elkaseer
29	Preprocessing-Aware Deep Learning Framework for Rib Fracture Segmentation in CT Imaging with Potential Applications to 3D-Printed Implants Nourhan Zayed and Ahmed Elkaseer

SEB Paper Presentations

SEB-01: G01-A: Sustainable and Resilient Buildings

Chair: Prof John Littlewood

Wednesday 8 July: 10:45 - 12:45

Room: 1

Paper No	Paper Title / Authors
23	Digital and Smart Integration in Prefabricated Timber Construction for Innovative Wooden Structural Systems Jozef Švajlenka, Erika Kurimská Pajerská, Igor Baláž and Terézia Pošiváková
35	A Breath of Fresh Air: A Novel Transdisciplinary Living Lab Methodology for Investigating Indoor Air Quality in Irish Primary Schools
44	Training Strategies for Upskilling Blue-Collar Construction Workers towards Sustainable Energy and Building Practices in Nigeria Isaiah Igbinoba Omoregie, Clinton Ohis Aigbavboa and Godwin Oseghale
48	Workplace Satisfaction and Productivity-Related Outcomes in an Open-Plan Office Toka Frihy, Agnese Chiucchiù, Benedetta Pioppi and Anna Laura Pisello
42	Digital Transformation and Building Information Modelling Integration in Architectural Practice to Deliver Sustainable Buildings Omar Assajer, John Littlewood and Yahya Al-Saeed
52	Measuring University Research Impact on the Development of the Largest Ultra Low Carbon Community in Wales, UK: Gwynfaen John Littlewood and Zoe Adams

*Online

SEB-02: G02-A: Sustainable Energy Technologies

Chair: Dr. Simon Walters

Wednesday 8 July: 15:15 - 17:15

Room: 1

Paper No	Paper Title / Authors
4	LLM-Mediated Demand Response Coordination in Smart Microgrids J. de Curtò and I. de Zarzà
21	Challenges and Opportunities of an Energy Community in Cuenca, Ecuador Atila Avila-Argudo, Jefferson Torres-Quezada and Steven Lopez-Sanchez
24	PV-Surplus-Driven Thermochemical Energy Storage for Flexibility in District Heating: A Case Study Ilaria Marotta, Andrea Frazzica and Valeria Palomba
25	A Bottom-Up Assessment of Fuel Poverty Risk under Heat Electrification: Integrating Building Performance Simulation with Affordability Analysis Marco Picco and Nick Adlam
39	Acoustic Performance of Lightweight Mortars Incorporating Etna Volcanic Ash for Sustainable Building Applications Carmelo D'Amico
43	Aggregating Residential Battery Flexibility into a Virtual Power Plant: A Data-Driven Case Study in Utrecht Simone Coccato, Ioannis Lampropoulos and Wilfried Van Sark

SEB-03: IS01-A: Implementing net-zero technologies in buildings and construction

Chair: Marianne Wiik

Wednesday 8 July 2026: 15:15 - 17:15

Room 3

Paper No	Paper Title / Authors
1	A Comparison of Simplified and Detailed Thermal Bridging Methods using Building Energy Simulation Lauren Morris, Mauro Simone and Eric Roberts
2	Data Driven Analysis of Construction Site Electrification in Oslo, Norway Marianne Rose Kjendseth Wiik, Selamawit Mamo Fufa, Shabnam Homaei and Aileen Yang
5	From Data to Action: Using Digital Twins for Reducing Operational Energy Consumption in Buildings Daniel Mongan, Zara Thomson and Eric Roberts
9	Green Public Procurement practices in EU Randi Ann Fagerholt, Katrin Knoth, Marianne Rose Kjendseth Wiik and Aileen Yang
20	Development of Calcium Silicate based alternative low cost core material for Vacuum Insulation Panel Waseem Abbasi, Mahmood Alam and Imran Rafiq

SEB-04: G01-B: Sustainable and Resilient Buildings

Chair: Prof John Littlewood

Thursday 9 July: 11:00 - 13:00

Plenary Room/Room 1

Paper No	Paper Title / Authors
7	A Structured Methodology for the Pre Selection of Positive Energy Districts: An Application to the City of Padua Paola Castellazzi, Carla Scordamaglia, Ennio Brugnetti, Chiara Tambani and Luigi Schibuola
6	Modelling and Development of Positive Energy Districts: An Application to the City of Turin Carla Scordamaglia, Paola Castellazzi and Ennio Brugnetti
8	Role of Biogenic Carbon in the Decarbonization of Flat Roofs: A Comparative LCA Study of Wood and Concrete Systems Silvia Vilčeková, Katarína Harčárová, Jana Budajová and Eva Krídlová Burdová
47	Embodied Water and Embodied Carbon Nexus in single-storey Australian residential buildings Chethana Illankoon and Iddamalgoda Pathiranage Tharindu Sandaruwan
50	Earth to Air Heat Exchange Systems as Source Energy for Air-Source Heat Pumps in Cold Climate Zones Trevor Butler and Allegra Butle
28	Thermal Performance Analysis of Geothermal-Assisted Air Conditioning Systems in School Buildings Manuel Altieri, Diana D'Agostino, Francesco Minichiello and Claudia Pagano

SEB-05: G03: Workshop on Innovation in Sustainable Agriculture and Food Production

Chairs: Prof Robert J. Howlett & Prof Giacomo Scarascia Mugnozza

Thursday 9 July: 11:00 - 13:00

Room 2

Paper No	Paper Title / Authors
29	Product Environmental Footprint of a Sicilian white wine: hotspot identification and benchmarking Marta Bonura, Maurizio Cellura, Sonia Longo, Francesco Guarino and Marina Mistretta
34	Energy Requirements in Buildings for Olive Oil Production in the Perspective of Energy Independence Ali Hachem, Fabiana Convertino, Evelia Schettini and Giuliano Vox
41	Design and Experimental Evaluation of a Low-Cost Air-Based PVT Heat Recovery System for Autonomous Agro-Industrial Drying Applications Mario Nájera-Trejo, Claudia K. Romero-Pérez, Rogelio A. Guerrero-Rodríguez, Erick César López-Vidaña, Jorge Lucero-Alvarez, H. E. González-Bravo, Adriana Coca-Ortegón and Alberto Coronas
49	Regenerative Design Strategies for Passive Solar Greenhouses in Cold Climates Trevor Butler and Veronica Madonna
41	Optimization of rainfall duration in laboratory tests to evaluate the water permeability of agricultural nets Audrey Maria Noemi Martellotta, Sergio Castellano, Ileana Blanco, Greta Mastronardi and Giacomo Scarascia Mugnozza
26	Design and optimisation of a low-power radiant desk as a personal comfort system CFD-supported development and prototype validation Marco Picco, Marco Bernagozzi, Roberto Rugani and Simon Walters

SEB-06: IS02-A: Sustainable Urbanisation for Resilient Territories: Integrating Low Energy and Low Carbon Strategies

Chair: Dr. Francesco Guarino

Thursday 9 July: 15:00 - 17:00

Plenary Room/Room 1

Paper No	Paper Title / Authors
13	Ontology-Driven Knowledge Graph Integration of Representative Digital Twin Use Cases for Sustainability Assessment in Green Building Neighborhoods Filippos Lygerakis, Nikolaos Kampelis and Dionysia Kolokotsa
14	From Vision to Implementation: A Scenario-Driven Architecture for Sustainable Neighborhood Transformation Filippos Lygerakis, Laurence Marzell, Nikolaos Kampelis and Dionysia Kolokotsa
27	Data Input Selection in Multi-Criteria Decision Analysis for Green Hydrogen Systems: A Literature Review Irene Guagliardo, Maurizio Cellura, Marco Ferraro, Manfredi Maniscalco and Marina Mistretta
31	A novel Spatial Urban Energy and Materials Model: circularity perspectives from application to two European cities Mafalda C. Silva, João P. Cardoso and Eduardo Monteiro
32	From District to City Scale: A Multi-Scale Pre-Feasibility Framework for Interconnected Positive Energy Systems Roberta Rincione, Ennio Brugnetti, Paola Castellazzi, Maurizio Cellura, Francesco Guarino and Carla Scordamaglia

SEB-07: IS03: Advanced HVAC Systems and Innovative Strategies for Thermal Comfort and Energy Efficiency in Buildings & IS04: Waste-to-Energy Innovations for Urban Sustainability

Chairs: Vincenzo Costanzo, Diana D'Agostino, Gianpiero Evola, Francesco Minichiello & Larisa Ivascu

Thursday 9 July: 15:00 - 17:00

Room 2

Paper No	Paper Title / Authors
22	Thermal-dynamic properties of agricultural buildings in terms of phase shift Jozef Švajlenka, Terézia Pošiváková, Igor Baláž and Erika Kurimská Pajerská
40	From data to technological solutions: life cycle analysis integrated with BIM for the environmentally sustainable reconstruction of a demolished building in Amatrice (RI) Angelo Picariello and Francesca Tropeano
45	Comparative lifecycle assessment of food and organic waste to energy production systems for urban sustainability: Case study of an emerging economy Md Tasbirul Islam, Amjad Ali, Sikandar Abdul Qadir and Muhammad Shahid

SEB-08: G01-C: Sustainable and Resilient Buildings

Chair: Prof John Littlewood

Thursday 9 July: 15:00 - 17:00

Room 3

Paper No	Paper Title / Authors
37	Comparative Hygrothermal Analysis of Synthetic and Biomaterial Fabric Systems for Retrofitting Solid Wall Dwelling in Wales, UK, to Inform Decision-Making Xinshuang Zhang and John Littlewood
16	From Data to Archetypes: A Transparent Method for Scalable Retrofit Planning Ozlem Duran and Jon Moorhouse
11	Leveraging Markov Logic Chains for energetic renovation suggestions Emma Nuyts, Mathias De Brouwer, Bertrand Fontaine, Sofie Van Hoecke, Marc Delghust and Femke Ongenae
10	The Illusion of Thermal Control: Persistent Thermal Exposure in Residential Buildings under Hot-Arid Climates Shatha Medabesh, Steven Firth and Sura Al-Maiyah
3	Modeling and parametric assessment of an Open-Cycle Seasonal Thermochemical Heat Storage integrated in a residential buildin Enrico Patrucco, Paola Castellazzi and Fabrizio Rainone
28	Thermal Performance Analysis of Geothermal-Assisted Air Conditioning Systems in School Buildings Manuel Altieri, Diana D'Agostino, Francesco Minichiello and Claudia Pagano

*Online

KES International

Knowledge Brokerage | Professional networks | Conferences | Publications | Membership Services

KES INTERNATIONAL

For over a decade the mission of KES International has been to provide a professional community, networking and publication opportunities for all those who work in knowledge-intensive subjects. At KES we are passionate about the dissemination, transfer, sharing & brokerage of knowledge. The KES community consists of several thousand experts, scientists, academics, engineers students and practitioners who participate in KES activities.



KES brings people together to make ... Knowledge Connections.

KES CONFERENCES

For over 25 years KES has run conferences in different countries of the world on leading edge topics -

Intelligent Systems -- *Intelligent Decision Technologies* -- *Intelligent Interactive Multimedia Systems and Services* -- *Agent and Multi Agent Systems* -- *Smart Technology based Education and Training*

Sustainable Technology -- *Sustainability in Energy and Buildings, Smart Energy* -- *Sustainable Design and Manufacturing*.

Innovation, Knowledge Transfer, Enterprise and Entrepreneurship -- *Innovation and Knowledge Transfer* -- *Innovation in Medicine and Healthcare*

Digital Media -- *Archiving Tomorrow* -- *Innovation in Music*



Some of the countries - Australia, Chile, Croatia, England, Germany, Japan, Ireland, Italy, Poland, Portugal, New Zealand, United States, Vietnam, Wales

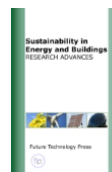
KES JOURNALS

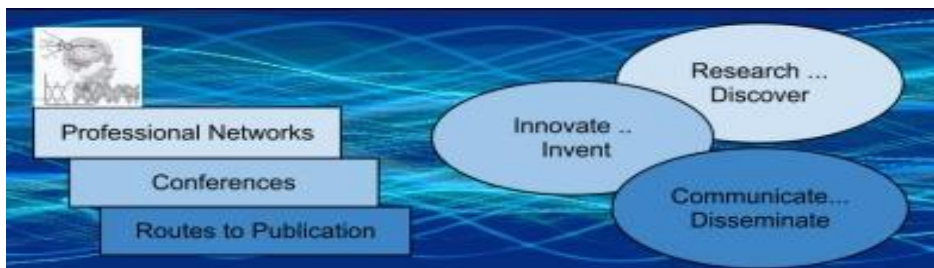
KES edits a range of journals and serials on knowledge intensive subjects -

-- *International Journal of Knowledge Based and Intelligent Engineering Systems* -- *Intelligent Decision Technologies: an International Journal* -- *InImpact: the Journal of Innovation Impact* -- *Sustainability in Energy and Buildings: Research Advances* -- *Advances in Smart Systems Research*

KES TRANSACTIONS -- THE KES OPEN ACCESS LIBRARY

KES Transactions is a book series containing the results of applied and theoretical research on a range of leading-edge topics. The series accepts conference proceedings, edited books and research monographs. Papers contained in KES Transactions may also appear in the KES Open Access Library (KOALA), our own online gold standard open access publishing platform.





TRAINING AND SHORT COURSES

KES can provide live and online training courses on all the topics in its portfolio. KES has good relationships with leading universities and academics around the world, and can harness these to provide excellent personal development and training courses.

DISSEMINATION OF RESEARCH RESULTS

It is essential for research groups to communicate the outcomes of their research to those that can make use of them. But academics do not want to run their own conferences. KES has specialist knowledge of how to run a conference to disseminate research results. Or a research project workshop can be run alongside a conference to increase dissemination to an even wider audience.



THE KES-IKT KNOWLEDGE ALLIANCE



KES works in partnership with the Institute of Knowledge Transfer (IKT), the sole accredited body dedicated to supporting and promoting the *knowledge professional*: those individuals involved in innovation, enterprise, and the transfer, sharing and exchange of knowledge. The IKT accredits the quality of innovation and knowledge transfer processes, practices activities, and training providers, and the professional status of its members.

ABOUT KES

Formed in 2001, KES is an independent worldwide association involving about 5000 professionals, engineers, academics, students and managers, operated on a not-for-profit basis, from a base in the UK. A number of universities around the world contribute to its organisation, operation and academic activities. KES International Operations Ltd is a company limited by guarantee that services the KES International organization.

KES International Management Ltd

PO Box 243
Selby
YO8 1DS
United Kingdom

Web Site: <http://www.kesinternational.org>

Email: enquiry@kesinternational.org

Registered in England and Wales as company no. 11110259





Cardiff
Metropolitan
University

Prifysgol
Metropolitan
Caerdydd



Springer

Find us here

LinkedIn

X@KESintl



KES International
<http://www.kesinternational.org>
KES International Management
Ltd is a private limited company
registered in England and Wales as
company no 11110259