



INTERNATIONAL BUILDING DECARBONIZATION 2022 CONFERENCE ATHENS, GREECE OCTOBER 5-7, 2022

CONFERENCE SPONSORS









ASHRAE			INTERNATIONAL BUILDING DECARBONIZATION 2022 CONFERENCE		ASHRAE Hellenic Chapter
		5	Wednesday October 5, 2022		
		Zeus 1 Level: Basement	Zeus 2 Level: Basement	Athina 1 Level: 1 st floor	Athina 2 Level: 1 st floor
10:00	11:00			tration resentations	
			Dimitris A. Charalambopoulo	s, Conference General Chair	
			Kent Peterson, AS	SHRAE TFBD chair	
11:00	11:30	KEYNOTE ADDRESS ASHRAE's Role in Building Decarbonization Thomas Phoenix Task-Force Co Chair 2021-22, P.E., LEED AP, FASHRAE, ASHRAE President 2004-05			
11:30	13:00	Special Session Decarbonizing CANADA Canadian Decarbonization: Adjusting Energy Production and Consumption K. William (Bill) Dean P.Eng., BSME Retired from National Research Council of Canada, Saskatoon, SK, Canada Decarbonization Locally Oakville, Ontario, Canada T. David Underwood B.Sc. in Civil Engineering HVAC&R Founder of Isotherm Engineering Ltd. Mississauga, Ontario Canada Industrial Facility Decarbonization Challenges – A Canadian Approach Erich Binder President, Erich Binder Consulting Limited (EBCL) RET, CRM	Special Session Decarbonizing MENA & INDIA A Whole life Approach to Decarbonization: Towards Zero Operational and Embodied Carbon Ghina Annan Sustainability Lead, Middle East & Decarbonization Team Lead, Ottawa Mechanical Engineer M.Sc. Applied Energy ————————————————————————————————————	Session-1: Policies and Practical Tools for Decarbonizing the Built Environment – Part I PAPER #161 Achieving Limerick's 2050 Vision: How Digital Twin Technology is Supporting the Drive Towards Net-Zero Cities Susan Pierce B.Sc., MEng, Integrated Environmental Solutions Ltd. Research Consultant at IES, Dublin, Ireland PAPER #116 Evaluating Long Term Greenhouse Gas Emissions in Buildings Philip Fairey FSEC Energy Research Center, University of Central Florida, Cocoa, Florida, USA Energy crisis- Opportunities & Challenges in SE Europe Costis Stambolis Chairman and Executive Director IENE	Session-2: Role of Occupants & other Sectors PAPER #168 Balancing Between Occupant Behaviour and Design Parameters for Energy Saving in Greek Apartments Aikaterini Drakou Architect Engineer, M.Sc. Environmental Design and Engineering UCL, Ph.D. (c) Dept. of Architecture, University of Thessaly PAPER #197 Setting sail for the ports of the future Prof. Theocharis Tsoutsos Ph.D., Chemical Engineer NTUA, Technical University of Crete- Renewable and Sustainable Energy Systems Lab PAPER #107 Water Systems Design and Operational Management Plans in an Interurban Bus Terminal Nearly Zero Energy Building George Leoutsakos M.Sc., DIC, Ph.D., Mechanical Engineer Deputy Engineering Director, Attiko Metro SA,

13:00	14:00				
		Zeus 1 Level: Basement	Zeus 2 Level: Basement	Athina 1 Level: 1 st floor	Athina 2 Level: 1 st floor
		FORUM Moving too Fast or too slow Towards	Session-3: Case Studies and Practical Insights – Part I	Session-4: Policies and Practical Tools for Decarbonizing	Session-5: Embodied Carbon Solutions
		Decarbonization Panel: o Tom Phoenix	PAPER #158 Identifying Reuse Pathway for Building Systems using Physical Reliability and	the Built Environment – Part II PAPER #162 Building Performance Standards – A New	PAPER #155 A 'Just Transition' for Renovations Murdoch MacPherson
	 Prof. Pantelis Capros William (Bill) Dean Costis Stambolis Sonya M. Pouncy Ghina Annan Case of Chillers and their Components Case of Chillers and their Components Sébastien Loreau M.Sc, in Architectural Engineering, Ph.D. (c) Université Catholique de Louvain, Louvain-La- Neuve, Belgium Tool to Decarbonize Existing Buildi Bing Liu P.E., Fellow ASHRAE, Building Sector Mar Pacific Northwest National Laboratory Richland, WA, USA 	Tool to Decarbonize Existing Buildings	P.Eng., Mechanical Engineer, President of MacPherson Engineering — . —		
		 Sonya M. Pouncy Ghina Annan 	Université Catholique de Louvain, Louvain-La-	P.E., Fellow ASHRAE, Building Sector Manager Pacific Northwest National Laboratory Richland, WA, USA	PAPER #128 Early-Stage Structural Estimation for Embodied Carbon Decision Making
14:00	16:00	 Contributors - Brief positions Drury Crawley Thomas Lawrence 	PAPER #170 First Actions to Decarbonization of Buildings in the Health Sector: Investigation of their Energy Profile in the Area of Central and Western Macedonia	PAPER #101 Earth Observations for Supporting the Decarbonization of Building Stocks Dr. Elena Dascalaki	Sara M. Laudeman M.Arch, B.A. Architecture, B.S. Mathematics; Assoc. AIA, Architectural Researcher at cove.tool, Atlanta, Georgia, USA
			Area of Central and Western Macedonia Christos Kostadimas Mechanical Engineer, M.Sc., MBA, Head of the Technical Department of the 3 rd Regional Healthcare Authority, Thessaloniki, Greece	Building Physicist, Research Director, IERSD. National Observatory of Athens Introduction to Building Decarbonization Dr. Drury B. Crawley	PAPER #199 Proper Evaluation of Embodied Carbon in Structures Emily Lorenz
			PAPER #132 Seasonal Solar Thermal Energy Storage for Balancing Cold Climate Geo- Exchange Systems	FASHRAE, BEMP, FIBPSA, AIA, AFFIL. CIBSE, Bentley Fellow/Director, Bentley Systems, Inc.Washington, DC, USA	PE, BS and MS in Civil Engineering, Independent Consultant in Chicago, USA
			Daniel Booy Mechanical Engineer (P.ENG.), AEE Certified Energy Auditor, Senior Engineer, Owner, Altum Engineering Ltd.		

16:00	16:30	Coffee Break				
		Zeus 1 Level: Basement	Zeus 2 Level: Basement	Athina 1 Level: 1 st floor	Athina 2 Level: 1 st floor	
		Session-6: Smart Grids	Session-7: Refrigeration &	Session-8: Data Centers	Session-9: Market Transformation	
16:30	18:30	How do Buildings Play a Role in Decarbonizing the Grid and how does the Grid Talk Back? Katherine Hammack Director, GBCI ——— The future of Heating is Electric, and it is Happening NOW Louis Rompre B.Sc. in Mechanical Engineering, Portfolio Leader – Trane EMEA ——— Perspectives 2020-2070 leading to Building Decarbonization Raul Simonetti HVAC/R Corporate Business Manager at CAREL Industries SpA	Refrigerants Refrigerants and Foam Insulation Blowing Agents for Residential and Commercial Building Decarbonization Dr. Konstantinos Kontomaris Technical Fellow at Chemours™ Co., Wilmington, Delaware, USA PAPER #176 Introducing an Innovative Circular Economy Ecosystem to Support the Reuse of Refrigerants Extracted from a Wide Range of HVAC-R Systems Operating under the Building Sector Nikolaos Barmparitsas Mechanical Engineer, MEng, MSc, MPhil, Senior Manager at Daikin Greece, Athens, Greece CO2 for Decarbonisation in Refrigeration Applications Dalavouras Dimitrios Mechanical engineer NTUA, MBA,PHD can., Ashrae OPMP certified, Technical Manager at General Refrigeration SA	Data Centers and the Race to Zero: Holistic Strategies to Reach Net-Zero by 2030 Dr. Marianna Vallejo Ph.D. Mechanical Engineering, Sustainability & Decarbonization Specialist, Advanced Facility Modeling & Analytics, Jacobs, Portland, Oregon, USA CO2 and OPEX Optimization of New and Existing Data Centers Michael Jux DiplIng.(FH) / CDCS, Senior Area Sales Manager at STULZ GmbH, Germany	Decarbonizing Urban Environments Through Hybrid Heat Pump District Heating Lucy Sherburn Chemical Engineer MEng Consulting Engineer at FairHeat, London, United Kingdom Market Transformation Through Embodied Carbon Josh Jacobs LEED AP+ BD&C, Vice Chair of ASHRAE 189.1, WAP Sustainability, Director of Sustainability MEP 2040 Challenge Kayleigh Houde PE, Associate, Computational Community Leader, Buro Happold, New York, NY	
18:30	20:00					
20:00	22:00			ne Party Paleo Faliro (NOPF)		



INTERNATIONAL BUILDING DECARBONIZATION 2022 CONFERENCE

Thursday October 6, 2022



		Zeus 1 Level: Basement	Zeus 2 Level: Basement	Athina 1 Level: 1 st floor	Athina 2 Level: 1 st floor
08:00	08:30		Registration	& Welcome	
			Plenary – Open Ceremony	y - Welcome Presentations	
08:30	09:00		Dimitris A. Charalambopoulo	s, Conference General Chair	
09:00	09:30	KEYNOTE ADDRESS Positioning ASHRAE for a Decarbonized Future Kent Peterson PE, FASHRAE, ASHRAE President 2007-2008, Vice President + COO P2S INC			
09:30	11:00	Special Session Decarbonizing US- part I Architect's role and collaboration opportunities in the decarbonization era Dan Hart FAIA, RE, Executive Vice President of Architecture, Principal, ParkHill, 2022 President, The American Institute of Architects Challenges and Opportunities for Smart and Sustainable Buildings Lakisha Woods CAE, Executive Vice President, Chief Executive Officer American Institute Architects (AIA) U.S. Federal Building Decarbonization Plans Harry Bergmann Management & Program Analyst, Building Technologies Office (BTO) Department of Energ PAPER #164 Energy Codes, Climate Policy, and Federalism in the United States Jim Edelson BS; MBA, Director of Policy, New Buildings Institute	Session-10: Solar and CHP Pathways PAPER #124 Integration of Solar Thermal Heating into a Hospital Ventilation Reheat System Dr. Monika Weiss Doctor of Psychology – Industrial/Organizational Psychology, Chief Sustainability Officer at ergSol, Inc., Fairfield, CA, USA PAPER #127 Combined Heat and Power plus Distributed Hydrogen Production for Building Decarbonization Dr. Vikas Patnaik Thermal-Mechanical Engineer, PhD, MBA, Vice President of Product Development at Modern Electron, Bothell, USA PAPER #147 Resilient Electrification of the Built Environment, including Connected, Intelligent and Flexible Capabilities Thomas Yeh Consultant for the Advanced Efficiency Solutions team at the New York State Energy Research and Development Authority, New York	Session-11: Case Studies and Practical Insights - Part II PAPER #136 Skyscraper Approaching Net Zero Chris K.W. Leung Associate, Building Performance Services, Cundall, Hong Kong, HKSAR PAPER #189 Modular Carbon Capture from Commercial Building Ventilation Air Jo Norris Materials Scientist & Engineer, M.A., B.S., B.A., Co-founder and CEO at Carbon Reform, Inc. PAPER #133 Decarbonization Roadmap for Large Scale Facilities and Campuses David Handwork PE, CEFP, Chief of Engineering, United Commercial Energy Partners, Frisco, TX USA	Session-12: Role of the Building Envelope PAPER #175 Operational Characteristics and Performance of Trombe Wall – Design Instructions – A Parametric Study Dr. Catherine Baxevanou Mechanical Engineer, M.Sc., Ph.D., Researcher at Department of Architecture, University of Thessaly, Volos, Greece ——————————————————————————————————

11:00	11:30	Coffee Break				
		Zeus 1 Level: Basement	Zeus 2 Level: Basement	Athina 1 Level: 1 st floor	Athina 2 Level: 1 st floor	
		Special Session	Session-13: Case Studies and	Session-14: Developments	Session-15: LIGHCOCE Workshop	
		Decarbonizing US - part II U.S. Government Action on Building Decarbonization -part I Kent Peterson PE, FASHRAE, ASHRAE President 2007-2008, Vice President + COO P2S INC U.S. Government Action on Building	Practical Insights - Part I PAPER #143 Energy Consumption Reduction of Commercial Buildings through the Implementation of Virtual and Experimental Energy Audit Analysis Ji Bae	The Current State of Standards and Methods for Quantifying Total Carbon in HVACR Appliance and Equipment William F. McQuade P.E, LEED AP, Fellow ASHRAE Vice President Sector Services, Air Conditioning Heating and Refrigeration Institute (AHRI)	"The Future of Construction Materials in the Decarbonization Era" Building Decarbonisation: Interventions and Requirements for Energy Saving and Next Gen Construction Materials Prof. Maria Taxiarchou Mining and Metallurgical Engineer	
11:30	13:00	Civil Engineer, M.Sc., Policy Officer Decarbonization of Buildings Founder and CEO, The Nesler Group Special Session Decarbonizing EU PAPER #101 Decarbonizing the European Building Stock: Past-Present-Future Decarbonization Dr. Constantinos Balaras Mechanical Engineer, FASHRAE, Research Director, National Observatory of Athens Decarbonization of Buildings: the European Initiatives and the Recast of the Energy Performance of Buildings Directive Dimitris Athanasiou Civil Engineer, M.Sc., Policy Officer DG ENER, European Commission E.U. Fundeded Research on Buildings Decarbonization Dr. Eleftherios Bourdakis Project Advisor at European Health and Digital Executive Agency (HaDEA)	M.S. Mechanical Engineering, Graduate Research Assistant at University of Maryland, College Park, United States of America Decarbonizing America's Largest Public Library System Pallavi Mantha LEED AP, WELL AP, M.Sc. in Sustainable Design BA. in Architecture, Associate, Carbon and Sustainability at Arup, New York, USA PAPER #112 Assessing the Effect of the Green Energy Transition of Islands on the Decarbonization of the Building Sector: Experiences from Pilot Studies of the React Project PAPER #103 Assessing Sustainable Mediterranean Cities and Decarbonization Kalliopi (Popi) Droutsa Environmental Physicist M.Sc., Research Assistant, IERSD, National Observatory of Athens	The Green Awaking: A Potential Future Carbon Economy and Determining Your Building's CO2 Footprint Dr. Thomas Lawrence Ph.D., P.E. and LEEED-AP Professor of Practice, College of Engineering, University of Georgia, Athens, Georgia USA Best Practices Towards Concrete Material Transparency and Decarbonization Tien Peng M.Arch, BE Mech Eng, LEEDap bd+c, PMP Building EQ – The Latest including Carbon Score Doug Cochrane P.Eng., LEED AP, MAshrae Independent Consultant Mississauga, Ontario Canada	National Technical University of Athens Decarbonization Potential in the Heavy Clay Industry Dr. Jens Geduhn Senior R&D Manager at Schlagmann Poroton GmbH & Co.KG, Germany Investigating the Use of Lightweight and Thermally Improved Structural Concrete for Greener Buildings - A Test Case Dr. Chrysanthi Panagiotopoulou Chemical Engineer. Senior Researcher National Technical University of Athens Smart Bridges: Unlocking the Potential of Self-Sensing and Lightweight Concrete Juliusz Żach Head of Research and Development Department Mostostal Warszawa S.A., Poland	
13:00	14:00		ASHRAE's Focus on Broa Ginger S PE, CEM, Cx President-Ele	- Presidential Luncheon d Building Decarbonization Scoggins A, FASHRAE act, ASHRAE ered Designs, Inc.		

		Zeus 1 Level: Basement	Zeus 2 Level: Basement	Athina 1 Level: 1 st floor	Athina 2 Level: 1 st floor
		Special Session Buildings & Beyond	Session-16: Case Studies and Practical Insights - Part IV	Session-17: Role of the HVAC Systems	Session-18: LIGHCOCE Workshop "The Future of Construction Materials
14:00	16:00	Accelerating Decarbonization in Buildings and Infrastructure Dr. Heleni Pantelidou Civil Engineer, Ph.D., CEng, MICE Associate Director at Arup, London, United Kingdom The Carbon Cost of Comfort & Safety Dr. Mohammad Tabarra Mechanical Engineer, Ph.D. Director at Arup, London, United Kingdom Operation Carbon for Rail Stations Armand Buesa Mechanical Engineer, CEng Senior Engineer at Arup, London, United Kingdom PAPER #106 HVAC Systems Design and Operational Management Plans in an Interurban Bus Terminal Nearly Zero Energy Building George Leoutsakos M.Sc., DIC, Ph.D., Mechanical Engineer Deputy Engineering Director, Attiko Metro SA, Athens, Greece	PAPER #134 Targeted Carbon Impact Analysis through Stakeholder Based Stratification and Visualization of Carbon Data Twisha Raja M.AAD, B.Arch, LEED AP (BD+C), Computational Designer at cove.tool, Atlanta, Georgia, USA Whole Life Carbon Zero Luke Leung PE, ASHRAE Fellow, LEED Fellow, BEMP, P Eng, ASHRAE Board of Directors, Sustainable Engineering Studio, Principle, SOM	PAPER #141 Unlocking Hidden Energy Efficiency Potential in Buildings using Artificial Intelligence Algorithms for HVAC systems Filippo Bernardello Computer Science Engineer, Business Unit Manager at Alperia Green Future, Soave (VR), Italy PAPER #185 Climate Change Impact on Office Building Cooling Demand and Life Cycle Assessment Ammar MHD Bachar Khourchid Sustainable Energy, M.S. candidate, College of Science and Engineering, Hamad Bin Khalifa University, Qatar Foundation An Owner's Perspective on Building Decarbonization K. William (Bill) Dean P.Eng., BSME Retired from National Research Council of Canada, Saskatoon, SK, Canada	in the Decarbonization Era" Lightweight Ceramic Tiles Development and Test Case for Green Buildings, part I Dr. Carmen Segarra Ferrando Senior Researcher and Head of the Pilot Plant at the Institute of Ceramic Technology (ITC) Lightweight Ceramic Tiles Development and Test Case for Green Buildings, part II Luis Guaita MBA & B.Sc., in Chemistry, Head of R&D of KERABEN GRUPO SAU Nano Modified Cellular Lightweight Concrete Thomas Vendel Mechanical Engineer Aercrete Technology AB, Sweden Novel Low Embodied Energy Multi- Functional Construction Materials, part I Prof. Maria Taxiarchou Mining and Metallurgical Engineer National Technical University of Athens Novel Low Embodied Energy Multi- Functional Construction Materials, part I Prof. Antonis Peppas Mining and Metallurgical Engineer National Technical University of Athens The LightCoce Business Ecosystem: Opportunity to Innovate in Building materials Konstantina Papakonstantinou M.Sc., Chemical Engineer, Business Development Manager at Lightcoce Ike, Lavion, Greece

16:00 17:00 EXECUTIVE SESSION: Auditorium: TBA THE FUTURE IS NOW Vision, Collaboration and Knowledge Dissipation on a global scale BY INVITATION ONL
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16:00	16:30	Coffee Break			
		Zeus 1 Level: Basement	Zeus 2 Level: Basement	Athina 1 Level: 1 st floor	Athina 2 Level: 1 st floor
16:30	18:30	FORUM Planning for Tomorrow Panel: • Ginger Scoggins • Kent Peterson • Dimitris Athanasiou • Eleftherios Bourdakis • Dan Hart • Lakisha Woods • Clay Nesler • Harry Bergmann			
		 Contributors - Brief positions Prof. Pantelis Kapros Costis Stambolis Bing Liu 			
18:30	20:00				
20:00	22:00	Greek Night Out @ Zafiro Experience, Galatsi			

			BUILDING DECARBONIZATION 2022 CONFERENCE		ASHRAE Hellenic Chapter
			Friday October 7, 2022		
		Zeus 1 Level: Basement	Zeus 2 Level: Basement	Athina 1 Level: 1 st floor	Athina 2 Level: 1 st floor
08:30	09:00		Registratio	n & Welcome	
09:00	09:30	KEYNOTE ADDRESS ASHRAE's Focus on Broad Building Decarbonization Prof. Donald Colliver Task-Force Co Chair, Ph.D. P.E., Professor, University of Kentucky, FASHRAE, ASHRAE President 2002-03			
09:30	11:00	 Session-21: Decarbonization Facets DEI2: Diversity, Equity and Inclusion in the Decarbonization, Energy Efficiency and Improvement of Our Buildings Sonya M. Pouncy CEM, LEED-AP is the founder and principal of Building Vitals Impacts of Climate Change and Urbanization on Future Building Performance Dr. Drury B. Crawley FASHRAE, BEMP, FIBPSA, AIA, AFFIL. CIBSE, Bentley Fellow/Director, Bentley Systems, Inc.Washington, DC, USA The Science Behind Climate Change and Decarbonization Prof. Donald Colliver Task-Force Co Chair, Ph.D. P.E., Professor, University of Kentucky, FASHRAE, ASHRAE, President 2002-03 	Panel Discussion: Building Decarbonization Global Advisory Panel discussion BY INVITATION ONLY	Session-19: Case Studies and Practical Insights - part V PAPER #109 Prudent Consumption: A Systemic Approach for Addressing Energy Efficient Design José Luis Marrero Sicardo Mechanical Engineer, JLMS, Consulting Engineers, PSC, San Juan, Puerto Rico, Founder and President PAPER #119 Decarbonizing the Health Care Sector Walt Vernon PE, EDAC, LEED AP, MBA, JD, LLM PAPER #101 Decarbonizing the Existing Residential Stock in India: Upgrading RETV through Uncertainty Analysis (VIRTUAL) Urvi Shah B.Arch., M.Tech., LEED GA, IGBC AP ICL Project Consultant at Integrated Environmental Solutions (IES Pune, India PAPER #120 Decarbonization & the Health Care Sector - The California Example Walt Vernon PE, EDAC, LEED AP, MBA, JD, LLM	Prof. Doulos T. Lambros Ph.D., M.Sc., Physicist, Hellenic Open University, Associate Professor, Patra, Athens <i>Evaluating the Impacts of Artificial Lighting Systems to Abiotic Resources and Biosphere</i> Prof. Georges Zissis Vice-Rector Toulouse 3 University for International Projects & Cooperation
11:00	11:30		Coffe	e Break	·

		Zeus 1 Level: Basement	Zeus 2 Level: Basement	Athina 1 Level: 1 st floor	Athina 2 Level: 1 st floor
		Session-23: Role of the building envelope			
11:30	13:00	PAPER #154 Decision Support Tool for designing hybrid TES materials for construction applications Chrysa Politi M.Sc, Mechanical Engineer, Researcher at National Technical University of Athens, Greece Achieving Decarbonization Through Open Innovation Maria Tsianti MEng Mechanical Engineer, MSc Nuclear Engineer, Project Manager at EXELISIS, Athens, Greece Building EQ – Building EQ The Latest including Carbon Score Doug Cochrane P.Eng., LEED AP, MAshrae Independent Consultant Mississauga, Ontario Canada			
13:00	14:00		Lu	nch	

END OF CONFERENCE See you again soon !