

**11th International Conference on
"Energy, Sustainability and
Climate Crisis"
ESCC 2024**



Corfu, Greece, August 26 - 30, 2024

Conference Venue

The conference will take place at the Ionian Academy, Corfu, Greece (**location 39.62103741177484, 19.923658014687827**). The Ionian Academy is located in the old town of Corfu next to Spianada Square.

For more information, please go to: <http://esc.uth.gr/venue/>

Directors of the Conference:

Distinguished Professor Panos Pardalos, Center for Applied Optimization, University of Florida (USA).

Associate Professor Georgios K.D. Saharidis, <https://greenyourfreight.eu>, University of Thessaly (Greece).

Professor and Chairman Mohsen A. Jafari, Industrial and Systems Engineering, School of Engineering, University of Rutgers (USA).

Professor and Chairman Soteris Kalogirou, Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology (Cyprus).

Associate Professor Vítězslav Máša, Faculty of Mechanical Engineering, Brno University of Technology (Czech Republic).

Assistant Professor Maria do Castelo Gouveia, Coimbra Business School | ISCAC (Portugal).

Professor Gülgün Kayakutlu, Faculty of Management, Istanbul Technical University (Turkey).

Associate Professor Joe Naoum-Sawaya, Management Science, Ivey Business School (Canada).

Associate Professor Bissan Ghaddar, Management Science & Sustainability, Ivey Business School (Canada).

Research Director Vassilios Kappatos, Head of Constructural and Infrastructure Research in Maritime and Air Transport Lab, Hellenic Institute of Transport (HIT), Center for Research and Technology Hellas (CERTH) (Greece).

Scientific Committee:

Associate Professor Mihalis M. Golias, University of Memphis (USA).

Chair of TC12 IFIP Eunika Mercier-Laurent, International Federation for Information Processing (FRANCE).

Assistant Professor Dimitris Zissis, Athens University of Economics and Business (Greece).

Organizing Committee:

Eleousa Zygouri, University of Thessaly (Greece).

Antonios Fragkogios, University of Thessaly (Greece).

Anna-Maria Panagioutaki, University of Thessaly (Greece).



Program Summary

Monday, 26 August 2024

- 08:00-09:00 Registration
- 09:00-10:30 Session 1: Energy Systems
- 10:30-11:15 Plenary Talk: Professor Dr. Panos Pardalos
- Energy Systems**
- 11:15-13:00 Session 2: Optimization
- 13:00-13:45 Light Lunch (Take Away)
- 13:45-14:30 Poster Session
- 14:30-15:15 Session 3: Emissions
- 15:15-17:15 Session 4: Transportation and Energy Efficiency

Tuesday, 27 August 2024

- 08:00-10:00 Session 5: Decision Making
- 10:00-10:45 Workshop: Associate Professor Vítězslav Máša &
Associate Professor Martin Pavlas
- Sustainability and Education**
- 10:45-13:00 Session 6: Renewable Energy
- 13:00-13:45 Light Lunch (Take Away)
- 13:45-15:15 Session 7: Mathematical Programming and Energy, Sustainability &
Climate Change
- 15:15-17:30 Session 8: Energy Efficiency

20:30 ESCC Dinner – Mesogeios, Corfu
Location: 53 Alkiviadou Dari Street Corfu, Greece
Log/Lat: 39.61041031770392, 19.925382436510617



Wednesday, 28 August 2024

- 08:00-10:00 Session 9: Operational Research and Energy, Sustainability & Climate Change
- 10:00-10:45 Plenary Talk: Professor Dr. Soteris Kalogirou
Renewable Energy Systems: Current Status in the World and Prospects
- 10:45-13:00 Session 10: Energy & Environment
- 13:00-13:45 Light Lunch (Take Away)
- 13:45-15:00 Session 11: Energy, Sustainability and Climate Change
- 15:00-16:45 Session 12: Sustainability
- 16:45-17:00 **"Panos Pardalos" Young Researcher Award**

Thursday, 29 August 2024 (Only for Invited Researchers)

- 08:00-09:20 Seminar in Benders Decomposition Methods: Theory (Tutor: A. Fragkogios)
- 09:20-10:40 Seminar in Convex Analysis Applications (Tutors: P. Pardalos and R. Bakker)
- 10:40-12:40 Round table: Green Energy (Chairman: M. Pavlas)
- 12:40-13:20 Light Lunch (Take Away)
- 13:20-15:20 Round table: LIFE GreenYourFreight Project: Service and Green Logistics (Chairman: Georgios K.D. Saharidis)

Friday, 30 August 2024 (Only for Invited Researchers)

- 08:00-09:20 Seminar in Benders Decomposition Methods: Applications in Energy Networks (Tutor: A. Fragkogios)
- 09:20-10:40 Round table: Green Energy (Chairman: V. Máša)
- 10:40-12:40 Organization of ESCC 2025 (Chairman: Georgios K.D. Saharidis)
- 12:40-13:20 Light Lunch (Take Away)



COFFEE, JUICE, WATER AND SNACKS
WILL BE OPEN AND FREE DURING THE SESSIONS

Sessions – Regular Presentations

Monday, 26 August 2024

Session 1: Energy Systems
(09:00-10:30)

Chairman: V. Máša

- (1) M. A. Ceballos, Ál. Valera, J. Montes-Romero, P. J. Pérez-Higueras, Fl. Almonacid & Ed. F. Fernández "Development and Evaluation of CPV Systems with Tracking-Integrated for Agrivoltaics Applications in the Mediterranean".
- (2) S. Toplak, M.Ö. Kayalica, G. Kayakutlu & D. Güven "Economic Comparison of New Built Internal Combustion Gas Engine Power Plant in Uzbekistan and Europe Based on Levelized Cost of Electricity (LCOE) Method".
- (3) F. Capolupo, P. Strazzullo, C. D'Alessandro, R. Russo, M. Musto, Fr. di Giamberardino & V. G. Palmieri "Performance Analysis of Thermoelectric Modules for Refrigerating Applications by Experimental Test with a Vacuum System".
- (4) M. Gülüm "Nanofluids for Automotive Radiators: Enhancing Cooling Performance and Efficiency".
- (5) K. Tsatsakis "A Secure and Privacy Preservation Framework for Energy Data Collection and Sharing".

Session 2: Optimization
(11:15-13:00)

Chairman: M. Gouveia

- (1) Vl. Nevrlý & J. Kubowský "Annual Waste Collection Plan at the Intermunicipal Level with a Nonlinear Generation Trend".
- (2) Ar. Di Nardo, En. Creaco, M. Iervolino & G. Fr. Santonastaso "SWANP 5.0: An Innovative Software to Provide a Decision Support System to Water Utilities for the Optimization of Water Network Partitioning".
- (3) L. Němcová & J. Kubowský "Efficient Route Planning for Bulk Material Transport: Integrating Vehicle Endpoint Optimization".
- (4) An. Moià-Pol "Decarbonization in Wineries: A Case Study of Mallorca Wineries".

POSTER Session
(13:45-14:30)

- (1) Y. Haramura "How to Achieve a Balance of Output Power and Efficiency of Stirling Engine".
- (2) J. Malá, K. Hrich, P. Karásek, M. Siglová & T. Halešová "Start-up Phase of Pilot Plant Denitrifying Bioreactor used for Simultaneous Removal of Pesticides".
- (3) K. Hrich & J. Malá "Autotrophic Denitrification with Granulated Sulfur and Limestone During Intermittent Operation".
- (4) N. S. Sahin, Il. Vergili & Y. Kaya "Determination of Environmental Impacts of a Processed Meat Product by Life Cycle Analysis (LCA)".
- (5) K. Kogan, Y. Perlman & Sm. Shatz "Enhancing Fisheries Sustainability Through Waste Processing: A Dynamic Model".



- (6) D. Sibera, I. Pelech, P. Staciwa, K. Sobczuk, E. Ekiert, E. Kusiak-Nejman, An. W. Morawski & Ur. Narkiewicz "Metal-Modified TiO₂ Photocatalysts for CO₂ Reduction with Hydrogen from Water Decomposition".
- (7) P. Christodoulides, L. Aresti, Ch. Christou, I. I. Stylianou & G. A. Florides "Studying a Ground Source Heat Pump System in the Mediterranean Climate of Cyprus".
- (8) S. Dosta, L. Betancor, G. Clavé, A. Svobodova & C. Barreneche "Integrated Computational and Experimental Materials Engineering of Thermal Spray Coatings".
- (9) Ch. Koutsiantzi, Al. Chatzis, I. Kellartzis, El. Lamprnidou, Ef. Peleka, E. Kikkinides & An. I. Zouboulis "Design and Investigation of a Membrane Gas Separation Process for the Post-combustion CO₂ Capture from Flue Gas".
- (10) Al. Chatzis, M. Gaspari, K. Kontogiannopoulos, L. Treu, St. Campanaro, An. Zouboulis & P. Kougias "Evaluating Packing Materials for Improved Efficiency in Biological Methanation within Trickle Bed Reactors".
- (11) Ev. Kokkinos, M. Giannakoudi, V. Kotsali & Anastasios Zouboulis "Upgrade of Serpentinized Olivine and its Valorization in AMD Neutralization".

Session 3: Emissions

Chairman: V. Kappatos

(14:30-15:15)

- (1) S. Sousa, C. Henriques & Cl. Viseu "Environmental Taxation in the EU: An Analysis of its Effects on CO₂ Emissions".
- (2) Th. Chrysanidis, Gr. Papageorgiou, N. Alamanis, V. Liakos & Ev. Farsirotou "Protection of Projects due to Environmental Conditions".

Session 4: Transportation and Energy Efficiency

Chairman: J. Pluskal

(15:15-17:15)

- (1) Ev. D. Spyrou & V. Kappatos "Allocation Airport Flight Slots using a Vickrey-Clarke-Groves Auction".
- (2) V. Sitokonstantinou, M. Golias, D. Zissis & G. Ioannou "Management of Container Port Terminals: The Effect of Cold Ironing to the Terminals Cooperation".
- (3) N. Rigogiannis, S. Fountoukidis, St. Kaliampetsou, An. Kyritsis, I. Gonos & N. Papanikolaou "Development of an Innovative All-Electric Propulsion Scheme for Inland Marine Transportation".
- (4) G. C. Mytalas & D. Zissis "Analysis of Container Port Management using Queueing Modelling with Priorities".
- (5) Al. Tromaras, V. Kappatos, M. Kilikidou & Ev. Spyrou "Preventive Fault Finding for Bus Air Compressor Units using Infrared Thermography".
- (6) R. Singh & D. MacKenzie "Evaluating the Impact of Public Charging Reliability on Electric Vehicle Adoption".
- (7) Ch. Liu & Y. Wu "Re-evaluating Container Throughput Forecasting Models in Ningbo-Zhoushan Port during the COVID-19 Pandemic".

Tuesday, 27 August 2024

Session 5: Decision Making

Chairman: L. Němcová

(08:00-10:00)

- (1) Ch. K. Karl & Ar. J. Spengler "Building Stock Simulation for Sustainable Decision Making".
- (2) Eh. Bolandifar, P. Kouvelis & Q. Yuan "Contracting and Sourcing Strategies in Global Supply Chains".



- (3) X. Shao "Group Cross-Efficiency Evaluation Based on Prospect Theory and Decision Consensus".
- (4) H. I. Calvete, F. Ederra, C. Galé, A. Hernández & J. A. Iranzo "Application of Multiobjective Optimization Models in a Sustainable Manure Management".
- (5) R. Lopes, J. P. Gouveia, C. Castro & Katherine Mahoney "Understanding Local Social Energy Stakeholders Needs to Foster Engagement in Social Energy Co-Design Plans in Mediterranean Rural Areas".
- (6) K. Psaraffis, Kl. Ntalianis, D. Stranis & S. Ioannidou "Eco-Friendly Ride-Sharing for Sustainable Transportation".

Session 6: Renewable Energy

Chairman: M. Pavlas

(10:45-13:00)

- (1) W. Supang, S. Ngamprasertsith, W. Sakdasri & R. Sawangkeaw "Biodiesel Production from Spent Coffee Grounds with Supercritical Ethanol: Economic Analysis and Life Cycle Assessment".
- (2) B. Pirouz & Fr. Guerriero "Artificial Intelligence Techniques for Optimal Sizing of Battery Energy Storage Systems with Renewable Resources".
- (3) B. Aydoğan, T. Görmüş & B. Ayat "Complementarity Analysis of Wind and Wave Power in the Eastern Mediterranean Sea".
- (4) T. Görmüş, B. Aydoğan & B. Ayat "Correlation Analysis of Wind and Wave Power in the Eastern Mediterranean Sea".
- (5) Us. Hasanah & J. Arima "A Just Energy Transition: The Critical Mineral and Renewable Energy Dilemma?".
- (6) M. Braglia, Fr. Di Paco, M. Frosolini, R. Gabbrielli & L. Marrazzini "Optimal Application of a Concentrating Solar System in an Existing Dairy".
- (7) G. Büyüközkan, Or. Feyzioğlu & F. Göçer "Renewable Energy Resources Selection for Turkey with Interval Valued Intuitionistic Fuzzy Multimoora Approach".
- (8) S. Han, B. Kim, J. Park & K. Park "Development of Correlation Analysis Technology Between Hydrogen Leak Hole Size and Displayed Concentration of Gas Detector in ppm".

Session 7: Mathematical Programming and Energy, Sustainability & Climate Change

Chairman: G. Mytalas

(13:45-15:15)

- (1) L. Ambrosino, G. Calafiore, Kh. M. Nguyen, R. Zorgati, D. Nguyen-Ngoc & L. El Ghaoui "Optimizing Electric Vehicles Charging Through Smart Energy Allocation and Cost-Saving".
- (2) C. Voyant, G. Notton & M. Asloune "A New Approach to Solar Irradiance Forecasting: Using Complex-Valued Time Series".
- (3) Ef. Ioannidis, L. Doitsidis, G. Tsinarakis & N. C. Tsourveloudis "Energy Efficient Production Order Admission and Quality Control in Single - Stage Production Systems".
- (4) J. Pluskal "Data Analysis Driven by Optimization Techniques to Identify Linkages Between Primary and Secondary Waste".
- (5) Ah. Saif, H. Masri & M. M. Sani "Waste-to-Energy Technology Selection and Capacity Planning in a Multi-Depot Waste Management System".

Session 8: Energy Efficiency

Chairman: L. Ambrosino

(15:15-17:30)

- (1) V.-M. Nikiforidis, St. Karakitsiou, An. Anastasiadis, K. Hrissagis-Chrysagis & G. Papadakis "EV Charging Demand Prediction Using Deep Neural Networks".
- (2) R. Lazzarin "Industrial Heat Pumps: Past Present Future".



- (3) J. P. Gouveia & In. Valente "Home Renovation Integrated Services through an Online Digital One-Stop-Shop".
- (4) Ol. Sequeira, F. Teixeira & J. Samartinho "Gross Value added and Electricity Consumption by Sector of Activity in Portugal – An Analysis of Technical Efficiency".
- (5) Z. Karataş, M. Doğmuş, S. Beçet & H. Sözer "Integrated Design Strategies for Sustainable Building Development: Optimizing Energy Efficiency from Micro to Macro Scales".
- (6) Ab. Hemmati & Ah. Tabatabaefar "Feasibility of Optimizing Olive Production: Energy, Environmental and Economic Aspects".
- (7) Ir. Duzdar, G. Kayakutlu & H. Aykas "Forecasting Energy Demand in Düzce Province of Türkiye through Comparison of Different Forecasting Methods".
- (8) Fr. J. Amador, An. Kortazar, G. Bueno & D. Hoyos "Life-Cycle Thinking into Cost Benefit Analysis: The case of High-Speed Rail".

Wednesday, 28 August 2024

Session 9: Operational Research and Energy, Sustainability & Climate Change

Chairman: Ir. Duzdar

(08:00-10:00)

- (1) M. Gouveia & C. Henriques "Assessing Eco-Innovation Dynamics in European Union Member States Using a Novel Window Value-Based Data Envelopment Analysis".
- (2) C. O. Henriques, C. Viseu & S. Sousa "Assessing Eco-Innovation Dynamics in European Union Member States Using Window Slack-Based Measure Data Envelopment Analysis".
- (3) S. S. Güteryüz & M. Yörükoğlu "Time Series Forecasting of Climate Change Impacts".
- (4) St. Tsafarakis & K. Zervoudakis "Optimal Product Line Re-Design for Reducing Food Wasted Due to Marketing Standards".
- (5) G. Kayakutlu "Generative AI Impacts on Sustainability".
- (6) S. D. S. Garmroudi, G. Kayakutlu & M. Ö. Kayalica "AI-Driven Optimization of an Integrated Multi-Energy System for Sustainable Consumption and Production".
- (7) M. S. Mustafaoglu, G. Kayakutlu & M. Ö. Kayalica "Three-phase Optimisation Model for a Community Energy System".

Session 10: Energy & Environment

Chairman: C. Henriques

(10:45-13:00)

- (1) On. Němček & St. Honus "Modern Technologies for Environmental Improvements and Hydrogen Production from Waste Materials".
- (2) Am. Sengupta "Leveraging 2D Materials for Sustainable Energy Storage Advancements".
- (3) D. Homa & Ł. Bartela "Economic Analysis of Potential Coal-to-Nuclear Investment in Poland".
- (4) D. Dongo & S. Relvas "Evaluating the Role of the Oil and Gas Industry in Energy Transition in Oil-Producing Countries: A Systematic Literature Review".
- (5) M. Kaloutsas, K. Kabassi & Ar. Martinis "Universities and the Sustainable Development Goal 7 on Affordable and Clean Energy".
- (6) I. Pelech, D. Sibera, P. Staciwa, K. Sobczuk, E. Kusiak-Nejman, An. W. Morawski & Ur. Narkiewicz "Photocatalytic Hydrogen Production using Titanium Dioxide Obtained by Microwaves-Assisted Method".
- (7) Ad. R. Irhamna & G. M. Bollas "A Novel Hydrogen and Nitrogen Production System for Decentralized Ammonia Production".



(8) S. Dosta, L. Betancor, G. Clavé, A. Svobodova & C. Barreneche "Introducing Novel Coatings for Bioenergy Solutions".

Session 11: Energy, Sustainability and Climate Change
(13:45-15:00)

Chairman: V. Sitokonstantinou

(1) R. Haas "On the Future Market Prospects of Electricity Storage".

(2) N. Xafoulis, Ev. Farsirotou, N. Alamanis & Sp. Kotsopoulos "A Comprehensive Approach to Enhancing Flood Risk Assessment, utilizing UAV-derived Digital Terrain Model in 2D Numerical Simulations with Crowdsourced Data".

(3) M. Pavlas, J. Pluskal & R. Šomplák "Challenges related to the Transition of Linear Waste Management into Circular Scheme".

(4) Al. Golberg, M. Mossery, M. Epstein, Abr. Kribus, M. Lishner & Michael Gozin "Towards Circularity of Healthcare Systems: Hydrothermal Liquefaction of Hospital Food Waste to Replace Fossil Fuels".

Session 12: Sustainability
(15:00-16:45)

Chairman: VI. Nevrlý

(1) N. S. Domingues & D. Beja "The Importance of Cybersecurity Measures to Grid Stability and Demand Side Management in the Energy Sector".

(2) Am. Ajanovic "On Sustainability of Mobility Supply Chain with a Focus on Battery Electric Vehicles".

(3) N. Alamanis, V. Liakos, Ev. Farsirotou, N. Xafoulis, Th. Chrysanidis, D. Zachos & Grigorios Papageorgiou "The Importance of Planting in Preventing Landslides".

(4) A. M. Iordache, C. Nechita, E. Feizula, R. Zgavarogea & R. M. Santos "Lithium Impregnation of Low-Density Polyethylene Membranes (LDPEMs) in the Process of Lithium Isotopes Separation (⁶Li/⁷Li) and Enrichment of ⁶Li".

(5) An. Amaro "Managing Risk Exposure and Logistic Services to Enhance Industrial Supply Chain Sustainability".

(6) G. Büyüközkan & P. Uygur "Evaluation of Hydrogen Production with Fuzzy Cognitive Mapping Approach".

Emergency Telephone Numbers

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Medical Emergency Department	166
Fire Department	199
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