IEEE Global Energy Conference 2024 (GEC2024)

December 4-6, 2024

University of California Riverside, Ca, USA

Batman University, Batman, Turkey

Sponsored by Batman University and Batman Energy Coordination Center (EKOM)
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PREFACE - WELCOME MESSAGE FROM THE CONFERENCE GENERAL CHAIR

Dear Colleagues,

It is with immense pleasure that I welcome you to the IEEE Global Energy Conference 2024. As the General Chair, I am delighted to host this esteemed gathering of researchers, practitioners, and industry leaders, all united by a shared commitment to advancing the global energy sector.

This year, the conference has brought together participants from 24 countries, with 122 submissions showcasing cutting-edge research and innovative ideas. After a meticulous review process, 66 papers have been accepted for presentation, resulting in an acceptance rate of 54%. These high-quality contributions highlight the diversity and depth of expertise in the energy field. All accepted papers will be published in the IEEE Xplore digital library and indexed by Web of Science, ensuring that their impact reaches the broader scientific community.

Today, I would like to highlight an essential chapter of our journey. Three years ago, our partnership with Turkey began through the efforts of Tahir Çetin Akıncı from Istanbul Technical University and Musa Yılmaz from Batman University, who joined our team and facilitated this invaluable connection. Since then, the collaboration between the University of California, Riverside, and Batman University has flourished. Through this partnership, the Center for Environmental Research and Technology at UCR and the Energy Coordination Center at Batman University have not only supported this conference but have also laid the foundation for numerous joint projects and initiatives in various fields.

I would like to express my heartfelt gratitude to all those who have made this event possible. My sincerest thanks go to the authors, keynote speakers, presenters, and participants for contributing their valuable expertise. I also extend my appreciation to the organizing committee, technical chairs, workshop and tutorial organizers, and all the volunteers whose dedication has ensured the success of this flagship conference.

Special recognition must be given to the Chancellor of Batman University, Prof. Dr. İdris Demir, for his unwavering support, as well as our esteemed partners, including IEEE, IEEE Turkey Section, IEEE Power & Energy Society (PES), and our sponsors, particularly Dicle Elektrik, Tupras, and Inogen Energy Technologies. Their collective efforts have been instrumental in making this event a reality.

This year, we also celebrate a special milestone in our journey. The collaboration between the University of California, Riverside (UCR) and Batman University has continued to thrive, exemplifying the power of global partnerships in addressing pressing energy challenges. This partnership has not only contributed to this conference but has also spurred joint initiatives and projects in energy research and innovation.

As we convene over the next few days, I encourage you to take full advantage of the opportunities to network, exchange ideas, and engage in meaningful discussions. The conference is not just an event but a collaborative effort to tackle the challenges of energy sustainability, security, and resilience. Your active participation is vital to driving impactful solutions that will shape the future of energy.

Lastly, I hope you enjoy your time at the conference and in the vibrant city of Riverside. From its cutting-edge research hubs to its cultural landmarks, this city offers a unique backdrop for our discussions on the energy landscape. Please do explore the opportunities for collaboration, discovery, and innovation.

Thank you for being part of the IEEE Global Energy Conference 2024. I look forward to the fruitful exchanges and groundbreaking outcomes that this event will inspire.

Best regards,

Alfredo M. Morales, Ph.D.
General Chair
IEEE Global Energy Conference 2024
University of California Riverside

KEYNOTE SPEAKERS

KATHLEEN KRAMER
(2024 IEEE PRESIDENT-ELECT)

Kathleen A. Kramer is a Professor of Electrical Engineering at the University of San Diego in California. She worked to develop new engineering programs as a founding member of the faculty and eventually became the chair of electrical engineering, and then serving as Director of Engineering (2004–2013), providing academic leadership for all of the university's engineering programs. Her teaching interests are in the areas of signal processing, mechatronics and robotics, and communication systems.

She has also been a Member of Technical Staff at several companies, including ViaSat, Hewlett Packard, and Bell Communications Research. She is a Distinguished Lecturer for the IEEE Aerospace and Electronic Systems Society (AESS) and is a past vice president of the society. She is a Fellow of ABET, and leader in the development of criteria for cyber security, mechatronics, and robotics.

She served on the IEEE Board of Directors as IEEE Secretary and chair of Governance, and as IEEE Region 6 (Western USA) Director. She was also chair of the 2023 IEEE Ad Hoc on Innovating Funding Models.

She received the B.S. degree in electrical engineering magna cum laude with a second major in physics from Loyola Marymount University, and the M.S. and Ph.D. degrees in electrical engineering from the California Institute of Technology.

JOSEP M. GUERRERO
DEPARTMENT OF ENERGY TECHNOLOGY
AALBORG UNIVERSITY, DENMARK.

(S'01–M'04–SM'08–FM'15) received the B.Sc. degree in telecommunications engineering, the M.Sc. degree in electronics engineering, and the Ph.D. degree in power electronics from the Technical University of Catalonia, Barcelona, in 1997, 2000 and 2003, respectively. Nowadays he is working towards the M.Sc. Degree in Psychobiology and Cognitive Neuroscience at the Autonomous University of Barcelona.
Since 2011, he has been a Full Professor with AAU Energy, Aalborg University, Denmark, where he is responsible for the

Microgrid Research Program. From 2019, he became a Villum Investigator by The Villum Fonden, which supports the Center for Research on Microgrids (CROM) at Aalborg University, being Prof. Guerrero the founder and Director of the same center (www.crom.et.aau.dk).
His research interests are oriented to different microgrid frameworks in applications like microgrid clusters, IoT-based and digital twins, cybersecurity, maritime microgrids for electrical ships, vessels, ferries and seaports, space microgrids applied to nanosatellites and closed bioecological systems, and smart medical systems. Prof. Guerrero is an Associate Editor for a number of IEEE TRANSACTIONS. He has published more than 900 journal papers in the fields of microgrids and renewable energy systems, which are cited more than 85,000 times. During nine consecutive years, from 2014 to 2022, he was awarded by Clarivate Analytics (former Thomson Reuters) as Highly Cited Researcher with 55 highly cited papers. In 2021, he received the IEEE Bimal Bose Award for Industrial Electronics Applications in Energy Systems, for his pioneering contributions to renewable energy based microgrids. In 2022, he received the IEEE PES Douglas M. Staszesky Distribution Automation Award, for contributions to making the hierarchical control of microgrid systems a practical reality.

DR. ING. MOHAMED BECHERIF
UNIVERSITY OF TECHNOLOGY OF BELFORT-MONTBÉLIARD, FRANCE.

Mohamed Becherif obtained his Engineer in Automatic Control from Polytechnical School of Algeria 99, DEA and PhD in Automatic Control from University of Paris Sud/Supélec in 2001 and 2004 respectively and joined UTBM since 2005. He is the Head of the Full-time Engineering training in Energy and Electrical Engineering UTBM and member of Femto-ST CNRS Lab. He is/was a scientific co-responsible or Principal Investigator in three European Projects FP7, French and international projects, and several industrial projects. He is co-author of more than 130 journal papers and more than 300 conference papers. He was/is the Manager Editor and Guest Editor of different Special Issue in different Elsevier Journals. H-index 43
He was the General Chair of the following conferences: ICEREGA'16 + 17 +18+20, EMF'17, cochair of ICEE'17, International Examinator on Energies for Czech Republic, Estonia, EAU, Egypt. He was/is the supervisor of 20 PhD and jury member in 21. He was invited professor in China, Canada, Egypt and Algeria. In 2020-2021-2022-2023 and 2024, he is listed by Stanford University as one of the World's top 2% Scientists (most cited scientists in various disciplines).

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PROGRAM

IEEE GLOBAL ENERGY CONFERENCE 2024

Dec 4-6, 2024 University of California Riverside

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Conference Center	**OPENING CEREMONY**	**December 4, 2024 Wednesday**	**Pasific Time**
	Alfredo M. Morales, General Chair	Opening Speech	09:00
	İdris Demir, Chancellor of Batman University	Opening Speech	09:15
	Reza Abbaschian, Representing Winston Chung Center, UCR		09:30
	Kathleen Kramer, IEEE President-Elect		10:00
	Josep M. Guerrero Aalborg University, Department of Energy Technology Denmark		10:30
	Mohamed BECHERIF, UTBM France		11:00
	Best Paper Awarded	Will be announced	
	Best Presentation Awarded	Dec 6,2024 Friday 18:00	

https://batman-edu-tr.zoom.us/j/91625285975?pwd=ZSBWCObuqDw5kJYpd94Vaem8cQvCwa.1

HALL A	**SESSION I Chair: T. Cetin Akinci**	**December 4, 2024 Wednesday**	**Pasific Time**
	Advanced Load Flow & Fault Analysis of Renewable Energy Integration in IEEE 9 Bus Power System	Saha Sajib, Alam Md. Ferdosh, Sayada Rezowana, Rahman Rashedur M., Hasan A S M Jahid	**13:30-15:00**
	A Cost-Effective 3D Finite Element Model for Predicting Transient Heat Transfer in U-tube Ground Heat Exchangers	Gamage Kumudu, Walive Pathiranage Manula Randhika Pathirana, Harbor David, Jo Wonjun, Jeem Abid, Chung Julius	
	Generating Energy or Saving Energy to Reduce Turkiye's Energy Import Dependency	Cagman Selman	
	An Overview of Planning for Vehicle-to-Grid Systems with Large-Scale Adoption of Electric Vehicles	Mohammadi Fazel, Mirhashemi Mahmood	
	Mitigation of FIDVR using Solid State Transformer in Active Distribution Systems	Ghambirlou Khaled	
	Design of a prototype dynamic line rating system for real-time monitoring of overhead transmission lines	Pablo Gomez, Erkan Dursun	
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	Evaluation of Mo-promoted Ni/AC catalysts in CO2 methanation: Effect of different synthesis method	Akpasi Stephen, Kiambi Sammy	
	Optimized Output Impedance for Parallel Inverters in Microgrids Utilizing ABC Algorithm and Droop Control Method	JOUDA Mohammed, Wadi Mohammed, Salemdeeb Mohammed, Tur Mehmet Rida	
	Forecasting Wind Energy Production: Analysis of Meteorological and Temporal Variables Using Optimized Regression Modeling	Yüksek Gökhan	
	Frequency Stability Improvement of Integrated Micro-Grid Using Battery Storage System Based Distribution Static Compensator (BESS-DSTATCOM)	Imtiaz Saqif , Munir Hafiz Mudassir, Ali Maqsood, Heybet Kilic Heybet, R. Altimania Mohammad, Yilmaz Musa Yilmaz, Yang Lijun	
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	Energy disaggregation of appliances considering simultaneous activation using dictionary learning technique	Sundas Ms., Sajjad Dr. Malik Intisar Ali, Abbas Muhammad	
	Edge-Based Machine Learning for Immediate Botnet Detection and Response in IOT Networks	A Boomika, Anwar Shifana	
	From Storage to Mobility: Addressing Battery Issues in Qatar's Energy Storage and Electric Vehicle Sectors	Maher Kenza	
	Enhancing Solar Power Forecasting through Feature Engineering with Wavelet Transform	Kavaz Ayse Gokcen	
	PID-F Controlled LFC in a Two-Area Power System with Renewable Integration Using Metaheuristic Approaches	Can Özay, Izci Davut, Ekinci Serdar, Ghandour Raymond, Salman Mohammad	
	Zoom Link:	https://batman-edu-tr.zoom.us/j/98669166535?pwd=SkWmBEB9qqYlUx1F7Jg5eNVopyI14M.1	

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	CFD Investigation on Heat Transfer Performance of Different Pipe Geometries at Various Reynolds Numbers	Kepekci Haydar, Ağca Mehmet Emin	
	Comparison of Sensorless Control Methods for Interior Permanent Magnet Motor	Sapmaz Tunahan, Bakan Faruk	
	Predicting First-Order System Parameters using Neural Networks Trained on Multiple Test Signals	Vispute Siddhant, Ushkewar Sandeep, PATIL GAURAV	
	Effect of Wire Size and Slot Filling Factor on The Number of Turns Per Pole in Design of SRM	Geçer Bekir, tosun öztürk, oyman serteller necibe, Akpolat Alper Nabi, Kari Kaşoğlu Gülten	
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	PV Systems Generation Prediction Considering Cloud Cover Using Deep Learning Techniques	Wadi Mohammed, Salemdeeb Mohammed, JOUDA Mohammed, Tur Mehmet Rida, Ayachi Bilel, Husain Nour	**10:45-12:15**
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	Investigation of machine learning for predicting the output of photovoltaic solar power	Ali Ahmed	
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	Fault Analysis in Power Transformers with Finite Element Analysis and Deep Learning: A Study on Flux Distributions	Sinay Merve, Balci Selami, Kayabaşı Ahmet, Aslan Muhammet Fatih, Aslan Büşra	
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	Comparative Assessment of the Patterns of Solar Irradiance from Multiple Locations Using Deep Learning Methods	Ali Ahmed	
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	Mitigating Sub-Synchronous Resonance with Adaptive Phase-Dependent Switching in static sub synchronous series compensator	Shahzad Sulman, Alsenani Theyab, Kilic Heybet	
	Preview of 3-Phase Induction Motor Design	Turun Ferhat, Öner Yasemin, Şenol İbrahim, Etçi Harun	
	Zoom Link:	https://batman-edu-tr.zoom.us/j/93042306403?pwd=cFJNRcEGlR6u0gWWvXZzxnVQ0bhkr9.1	

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	Arc Flash Analysis Review At Various Applications And Voltage Levels Of Power Systems	Kayal Abdulhamid, BAY Ömer	
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	Effect of Volt/Var Control on Optimal Hosting Capacity of Distributed Energy Resources	Kim, Insu	
	Direct synthesis-based optimal PIDD2 controller design for enhanced load frequency control in electrical power systems	Güler Yavuz, Nalbantoğlu Mustafa, KAYA Ibrahim	
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	Zoom Link:	https://batman-edu-tr.zoom.us/j/97157316995?pwd=3NtszDLYItqbKO19Wx5ANkwjLa	

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- Erkan Dursun – Western Michigan University, US
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