

**12<sup>th</sup> INTERNATIONAL CONFERENCE on RENEWABLE  
ENERGY RESEARCH and APPLICATIONS  
(ICRERA 2023), Oshawa, Canada  
August 29 - September 1, 2023**

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# TOPICS

Topics within the scope of the conference include the following areas, but not limited to:

- Renewable (Green) Energy Systems and Sources (RESSs) as Wind Power, Hydropower, Solar Energy, Biomass, Biofuel, Geothermal Energy, Wave Energy, Tidal energy, Hydrogen & Fuel Cells, Energy Storage
- New Trends and Technologies for RESSs
- Policies and Strategies for RESSs
- Energy Transformation from Renewable Energy System (RES) to Grid
- Novel Energy Conversion Studies for RESSs
- Power Devices and Driving Circuits for RESSs
- Control Techniques for RESSs
- Grid Interactive Systems Used in Hybrid RESSs
- Performance Analysis of RESSs
- Hybrid RESSs
- Decision Support Systems for RESSs
- Renewable Energy Research and Applications for Industries
- RESSs for Electrical Vehicles and Components
- Artificial Intelligence and Machine Learning Studies for RESSs and Applications
- Computational Methods for RESSs
- Energy Savings for Vehicular Technology, Power Electronics, Electric Machinery and Control, etc.
- New Approaches in Lightings
- Public Awareness and Education for Renewable Energy and Systems
- Reliability and Maintenance in RESSs
- Smart grids and RESSs
- Safety and Security of RESSs
- Renewable Energy Systems in Smart Cities
- Future Challenges and Directions for RESSs
- IoT for RESSs
- Energy Management, VPP(Virtual Power Plant) and ERAB (Energy Resource Aggregation Businesses) for RESSs
- Model based Design and Digital Twin for RESSs

# LANGUAGE

The official language of the ICRERA conference is English

# WELCOME to ICRERA 2023

Dear Colleagues,

The purpose of the International Conference on Renewable Energy Research and Applications (ICRERA) 2023 is to bring together researchers, engineers, manufacturers, practitioners and customers from all over the world to share and discuss advances and developments in renewable energy research and applications.

After the successes of the first, the second, the third, the fourth, the fifth, the sixth, the seventh, the eighth, the ninth, the tenth, and the eleventh editions of ICRERA in Nagasaki (2012), Madrid (2013), Milwaukee (2014), Palermo (2015), Birmingham (2016), San Diego (2017), Paris (2018), Brasov (2019), Glasgow (2020), Istanbul(2021), Istanbul(2022), the 12th ICRERA 2023 is going to be organized by the technical co-sponsorship of IEEE IES and IAS in Oshawa, Canada on August 29 – September 1, 2023. Attending ICRERA 2023 will benefit you to meet well-known expert keynote speakers, tutorial organizers, special session organizers as well as young and many other colleagues coming from more than 60 countries.

It is our happiness to share with you that selected 100 papers at ICRERA2022 have been proposed for possible publications in

- IEEE Transactions on Industrial Applications (15 papers) cited in SCI-Expanded,
- International Journal of Renewable Energy Research (15 Papers) cited in ESCI,
- International Journal of Smart Grid (20 papers) cited in Google Scholar,
- International Journal of Engineering Science and Applications (14 papers),

and

- Electric Power Components and Systems (36 papers) cited in SCI-Expanded.

Up to 2023, all papers presented ICRERA have been cited in IEEE Xplore, SCOPUS and Web of Science (Clarivate Analytics).

According to WEB of Science (Clarivate Analytics) in 2023;

h-index = 24

Average citation per item = 4.3

5 Years Impact Factor = 12.35

ICRERA aims to present important results to the international renewable energy community in the form of research, development, applications, design, and technology. It is therefore intended to assist researchers, scientists, manufacturers, companies, communities, agencies, associations and societies to keep abreast on new developments in their specialties and to unite in finding alternative energy solutions to current issues such as the greenhouse effect, sustainable and clean energy issues.



Professor Sheldon Williamson,  
General Chair, ICRERA 2023



Professor Adel Nasiri,  
Co-Chair, ICRERA 2023



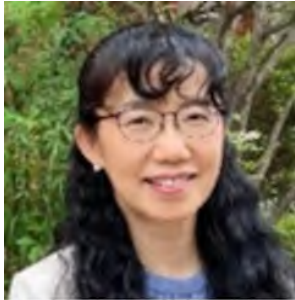
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Co-Chair, ICRERA 2023



Professor Fujio KUROKAWA,  
Co-Chair, ICRERA 2023

# KEYNOTE SPEAKERS

**Keynote 1: Noriko Kawakami, Toshiba Mitsubishi-Electric Industrial Systems Corporation (TMEIC) Power Electronics Systems Division Fuchu, Tokyo, Japan**  
**Date : August 30, 2023 10.00-11.00 AM**



## **Biography:**

Dr. Noriko Kawakami (M'95-SM'16-F'18) is Senior Fellow in the Power Electronics Systems Division at Toshiba Mitsubishi-Electric Industrial Systems Corporation (TMEIC).

She has led development projects of large-capacity power electronics equipment for more than 30 years.

Her main achievements are related to grid-connected converters and inverters, and their applications to distributed energy sources such as fuel cells, wind turbines, and battery energy storage systems, and their sophisticated control systems, including HVDC systems employing MMC topology. In 2003, she moved from Toshiba Corp. to Toshiba Mitsubishi-Electric Industrial Systems Corporation (TMEIC) which is a successful joint venture of two major Japanese companies in the industrial field.

She served as the President of Industry Applications Society of IEE-Japan from 2018 to 2020.

She has served as a members-at-Large of IEEE PELS Administrative Committee since 2018, a regional distinguished lecturer of R10 since 2020 and an editor of the Journal of Emerging and Selected Topics in Power Electronics (JESTPE) since 2020

She received the IEEE McMurray Award for Industry Achievements in Power Electronics in 2022.

## **Power electronics technology contributing to carbon neutrality**

**Summary:** At COP27, held in Egypt in November 2022, the agreement reached at COP26 to limit the increase in global average temperature to 1.5°C was maintained and emphasized its importance. At the G7 Environment Ministers' Meeting held in Sapporo, Japan, in April 2023, it was clearly stated that the introduction of renewable energy will increase, including an increase of 150 GW of offshore wind power and 1 TW of PV generations, and that hydrogen and ammonia will contribute to the carbon neutrality of various sectors and industries. To realize a carbon-neutral society, it is also important to reduce CO<sub>2</sub> emissions by improving the efficiency of energy consumption. Power electronics technology is involved in all of those aspects. TMEIC continues to develop power electronics (PE) technology under the slogan "PEiE: Power Electronics in Everything" to contribute to carbon neutrality. In this presentation, I will introduce large capacity power electronics technology that contributes to carbon neutrality.

**Keynote 2: Professor Udaya Madawala, University of Auckland, New Zealand**  
**Date : August 30, 2023 11.10-12.10 AM**



**Biography:**

Udaya K. Madawala graduated with a B.Sc. (Electrical Engineering) (Hons) degree from The University of Moratuwa, Sri Lanka, and received his PhD (Power Electronics) from The University of Auckland, New Zealand as a Commonwealth Doctoral Scholar. At the completion of his PhD, he was employed by Fisher & Paykel Ltd, New Zealand, as a Research and Development Engineer to develop new technologies for motor drives. At present as a Full Professor in the Department of Electrical and Computer Engineering at University of Auckland, New Zealand, he leads a large group of researchers focusing on a number of power electronics projects that are related to energy and wireless EV charging systems for V2X applications.

Udaya is a Fellow of the IEEE and was a Distinguished Lecturer of the IEEE Power Electronic Society (PELS), and has both industry and research experience in the fields of power electronics and energy. He has served both the IEEE Power Electronics and Industrial Electronics Societies in numerous roles, relating to editorial, advisory, conference, technical committees and chapter activities. He was the General Chair of the 2nd IEEE Southern Power Electronics Conference (SPEC)- 2016, held in New Zealand, and is also the Chair of SPEC Steering Committee. Udaya, who has over 300 journal and conference publications, holds a number of patents related to wireless power transfer (WPT) and power converters, and is a consultant to industry.

**Inductive Power Transfer Technology for V2X Applications**

**Summary:** The penetration rate of Electric vehicles (EVs) into the transport sector is becoming high. Inevitably such high level of penetration will also bring some challenges to the electric power industry. One potential solution of high promise is the vehicle-to-X (V2X) technology that enables EVs to be used as an energy storage to offer services through vehicle-to-home (V2H), vehicle-to-grid (V2G), vehicle-to-building (V2B) and vehicle-to-load (V2L) concepts. For all V2X applications, EVs essentially require a bi-directional power interface either with the electricity network (grid) or load to allow for both storing (charging) and retrieval (discharging) of energy. This can be achieved by both wired and wireless means but the latter, based primarily on Inductive Power Transfer (IPT) technology, is becoming more popular being convenient, safe, and ideal for both stationary and dynamic charging of EVs. The seminar discusses the challenges and future directions of V2X technologies, and presents the latest advances in bi-directional wireless power transfer (BD-WPT) technology developed for V2X applications.

**Keynote 3: Professor Dan M. Ionel, IEEE Fellow, University of Kentucky, USA**  
**Date : August 31, 2023 10.00-11.00 AM**



**Biography:**

Dan M. Ionel, Ph.D., FIEEE, is Professor of Electrical Engineering and the L. Stanley Pigman Chair in Power at University of Kentucky (UK), Lexington, KY, where he also serves as the Director of the PEIK Institute and of the SPARK Lab. Before joining UK in 2015, he worked in industry, most recently as Chief Scientist and Engineer with very large multi-national Fortune 1,000 companies, and was a visiting professor with universities in Milwaukee, WI. Research and teaching include topics of renewable and sustainable energy technologies, electric machines and power electronic drives, electromagnetic devices, electrified

transportation, electric power systems, smart grids and buildings.

He received the M.Eng. and Ph.D. degrees in electrical engineering from the University Politehnica of Bucharest, Romania. Dr. Ionel's doctoral program included a Leverhulme Visiting Fellowship at the University of Bath, England. He was a Postdoctoral Researcher with the SPEED Laboratory, University of Glasgow, Scotland.

Dr. Ionel contributed to technological developments with long lasting industrial impact, to many premier and large volume products, and holds more than forty patents, including a medal winner at the Geneva Invention Fair. His research has been supported by NASA, NSF, DOE, DoEd, ONR, NIST, and directly by leading industrial companies and utilities. He co-authored three books, published more than two hundred papers, including multiple winners of IEEE Best Paper Awards, and received the CG Veinott Award, the highest distinction for electromechanical energy conversion from the IEEE Power and Energy Society.

He is an IEEE Fellow, was the inaugural Chair of the IEEE Industry Applications Society Renewable and Sustainable Energy Conversion Systems Committee, Chair of the IEEE Power and Energy Society Electric Motor Subcommittee, Editor of IEEE Transactions on Sustainable Energy, Technical Program Chair of the IEEE ECCE 2015 Congress, the General Chair of the IEEE 2017 IEMDC Conference Anniversary Edition, the Editor-in-Chief of the Electric Power Components and Systems Journal, and the Chair of the Steering Committee for the IEEE IEMDC Series of Conferences.

**Electric Aircraft – Recent Technology Developments in the US**

**Summary:** Current research and development and field deployments of electric, hybrid, and turboelectric aircraft are highly motivated by the stringent need to reduce the energy use and carbon emissions towards an ultimate zero target. The presentation will overview trends with examples provided by a large number of recent and ongoing projects supported directly by industry, by the US Department of Energy (DOE) under the ARPAE ASCEND program, and by NASA, including some of the projects to which the speaker and his research group have been directly contributing. Special emphasis will be placed on the ongoing NASA ULI IZEA project with academic partners, alongside University of Kentucky, from Florida FAMU-FSU, Georgia Tech, University at Buffalo – State University of New York, and industry including Boeing, Raytheon Technologies, Collins Aerospace, AML, and QM Power. A recently developed method for the initial sizing of aircraft electric power systems, based on the graph theory and computational intelligence, which has been published in the IEEE Trans on Electrification of Transportation, will be presented and used to illustrate possible architectures and highlight their relative merits and advantages. The discussion will cover topics of energy sources and storage, including hydrogen, fuel cells, and Li-ION batteries, and distributed systems with multiple electric circuits, and power electronic converters. Electric motors for aircraft propulsion will be also reviewed with topologies including PM synchronous in radial and axial flux configurations, special rotors of the PM and Halbach array type, and multiple rotor and stator units, each with relative merits in terms of ultra-high efficiency and power density, and fault tolerance. A new machine of the synchronous type with a robust consequent-pole reluctance rotor and dual stator excitation, employing an AC three-phase winding with concentrated coils and a special wave-type DC winding, will be described. Another section will be devoted to the latest manufacturing technologies for electric machines, coreless stators, special windings, superconducting and cryogenically cooled integrated systems. The conclusions will summarize the state-of-the art and the anticipated developments.



**Keynote 4: Professor Hiroo Sekiya, Chiba University, Japan**  
**Date : August 31, 2023 11.10-12.10 AM**



**Biography:**

Hiroo Sekiya received the B.E., M.E., and Ph.D. degrees in Electrical Engineering from Keio University, Yokohama, Japan, in 1996, 1998, and 2001 respectively. Since April 2001, he has been with Chiba University, and now he is a Professor at the Graduate School of Engineering, Chiba University, Chiba, Japan. Besides, he is the Honorary Professor of Xiangtan University, China, and the Specially Appointed Professor of Nagasaki Institute of Applied Science, Japan. From Feb. 2008 to Feb. 2010, he was also a visiting scholar in Electrical Engineering, Wright State University, Ohio, USA.

His research interests include wireless power transfer systems, high-frequency tuned power amplifiers, resonant converters, nonlinear phenomena on electrical circuits, communication protocol designs, and digital signal processing for wireless communications, speech, and images. He won the best paper award of ICRERA2021, etc.

Dr. Sekiya has served IEEE CASS Board of Governors, Vice-Chair of IEEE PELS Japan Joint Chapter (2022-2023), Associate Editors of International Journal of Renewable Energy Research, IET Circuits, Devices & Systems, and IEEE Journal of Emerging and Selected Topics in Power Electronics. He is a senior member of the IEEE, a fellow of the IEICE, Japan, etc.

**Load-Independent High-Frequency Inverter and Its Applications**

**Summary:** The emergence of next-generation semiconductor devices, such as GaN devices, has lowered the barriers to achieving high frequencies in power converters, reaching the megahertz range. In this context, high-frequency inverters are gaining popularity and finding applications in various areas, including single-phase DC/AC inverters, the power transmission component of wireless power transfer, and the DC/AC conversion part of resonant converters. These are used many applications, such as micro-grid converter, rechargeable battery charging, power supply for environment IoT devices, and so on. However, high-frequency inverters are highly sensitive to load and reactance variations. The load variations affect the converter performance, especially power conversion efficiency. Soft switching achievement and output control are mandatory technologies for this issue, which are major research topics on high-frequency inverters. The development of technologies contributes to the energy saving of electrical products.

This presentation will focus on a load-independent high-frequency inverter that demonstrates robustness against load variations. The load-independent inverter theoretically guarantees constant output voltage and soft switching in the presence of load variations WITHOUT any control! As a result, they have attracted significant attention, especially for wireless power transfer applications. The presentation will cover the fundamental operation of the load-independent inverter, design principles for wireless power transfer utilizing load-independent characteristics, and several specific applications.

**Keynote 5: Professor Babak Nahid-Mobarakeh, Electrical Engineering Electrical and Computer Engineering Dept. McMaster University, Canada**

**Date : September 01, 2023 09.30-10.30 AM**



**Biography:**

Dr. Babak Nahid-Mobarakeh received the PhD degree in electrical engineering from the Institut National Polytechnique de Lorraine (INPL), Nancy, France, in 2001. From 2001 to 2006, he was with the Centre de Robotique, Électrotechnique et Automatique (CREA), University of Picardie, Amiens, France. In September 2006, he joined the École Nationale Supérieure d'Électricité et de Mécanique (ENSEM), University of Lorraine, Nancy, where he was a Professor until December 2019. Since January 2020, he has been a

Professor at Electrical and Computer Engineering Dept., Faculty of Engineering, McMaster University, Hamilton, ON, Canada.

Dr. Nahid-Mobarakeh has authored or co-authored more than 300 international peer-reviewed journal and conference papers as well as several book chapters. He holds 7 published patents. He is the recipient of several IEEE awards. He was the General Chair of the 2020 IEEE Transportation Electrification Conference and Expo. Between 2012 and 2019, he served as an Executive Officer and Committee Administrator for the Industrial Automation and Control Committee (IACC) of the IEEE Industry Applications Society (IAS). He was also a Technical Committee Paper Review Chair of the IEEE Trans. On Industry Applications. Currently, he is the Vice Chair of the IEEE Power Electronics Society (PELS) Technical Committee on Electrified Transportation Systems. He is also a member of the Power Electronics and Motion Control (PEMC) Council.

**Trends in Control of Renewable Energy Systems**

**Summary:** Control of renewable energy systems (RES) plays an important role on their stability, resilience, penetration in the grid and compliance with standards and regulations. On one hand, new topologies of power electronics and power systems are being developed to improve the RES performance in terms of efficiency and reliability. On the other hand, new energy storage systems are being integrated into the RES to overcome the intermittent nature of the main RES. These developments cannot be effectively employed without adapted control algorithms.

In this keynote, after a quick overview of some RES topologies and some power converters for RES, the speaker focuses on recent advances on control techniques for power control, energy management and active stabilization in RES. Different techniques will be studied and compared. Design examples will be presented for some use cases. Finally, future challenges in the control of RES will be discussed.



# TUTORIALS

## **Tutorial 1: Big Data Analytics, Security and Privacy Issues in Smart Energy Systems**

**Date : August 29, 2023- 13.30-14.30 PM**

**Organizer:** Prof. Seref Sagiroglu, Gazi University, Ankara, Turkiye



### **Biography:**

Prof. Dr. Seref Sagiroglu completed his undergraduate education in 1987 at Erciyes University, Department of Electronics Engineering. He completed his doctoral studies at the University of Wales College of Cardiff (now Cardiff University, UK) in 1994. He continues his academic career as the full professor in Software Engineering at Gazi University Computer Engineering Department. Sagiroglu has an outstanding academic with more than 8000 citation; almost 400 articles published in SCI/SSCI indexed journals, national and international conferences, symposium and workshops.

Prof. Sagiroglu:

- is author and/or editor of more than 20 books, owns 4 patents and has completed national and international projects on security, big data, intelligent modeling and control, biometric, etc.
- organised more than 50 national and international events on artificial intelligence, 5G, Big Data, Machine Learning, Deep Learning, Information and Cyber Security, Privacy, IPv6, etc. as a chairman or co-chairman. Some of them are: International Conference on Information Security and Cryptology ([www.iscturkey.org](http://www.iscturkey.org)); IEEE International Conference on Computer Science and Engineering ([www.ubmk.org](http://www.ubmk.org)); IEEE Big Data, Deep Learning and Fighting Cyber Terrorisms ([www.ibigdelft.org](http://www.ibigdelft.org)); IEEE International Conference on Machine Learning and Applications ([www.icmla-conferences.org](http://www.icmla-conferences.org)); Big Data Analytics, Security and Privacy Workshop ([www.bigdatacenter.gazi.edu.tr](http://www.bigdatacenter.gazi.edu.tr)); National Cyber Terrorism Conference ([www.siberterror.org](http://www.siberterror.org)); Turkey Open Data Conference ([www.acikveriturkiye.org](http://www.acikveriturkiye.org)); IEEE 5G Summit-Istanbul ([www.ieeesummit.org](http://www.ieeesummit.org)); IPv6 Council Turkey ([www.ipv6forumtr.org](http://www.ipv6forumtr.org)); National IPv6 Conference ([www.ipv6.org](http://www.ipv6.org)).
- also has been founding members of Information Security Association ([www.bilgiguvenligi.org.tr](http://www.bilgiguvenligi.org.tr)); Member of IEEE Biometric Task Force; Turkish Science Research Foundation ([www.tubav.org.tr](http://www.tubav.org.tr)), and The Foundation of the People Caring for the Future ([www.gonder.org.tr](http://www.gonder.org.tr)). Sagiroglu had such duties as President and Executive Committee Members of those NGOs.
- completed the duties as the Deans of Graduation School of Science and Technology and Engineering Faculty, and Head of Computer Engineering Department at Gazi University; Editors of International Journal of Information Security Science ([www.ijiss.org](http://www.ijiss.org)); International Journal of Information Security Engineering (in Turkish) ([www.dergipark.gov.tr/ubgmd](http://www.dergipark.gov.tr/ubgmd)) and CyberMag ([www.cybermag.com](http://www.cybermag.com)); General Director of FutureTech ([www.futuretech.com.tr](http://www.futuretech.com.tr)); Member of Cyber Security Group of Higher Education Council of Turkey.
- contributed to consultants to Havelsan; IT Regulatory Body of Turkey (BTK) and Personal Data Protection Regulatory Body of Turkey (KVKK).
- has delivered as invited or keynote speakers more than 500 seminars, talks, conferences at universities, schools, sectors, TV and Radio Programs, institutions and organisations in the topics of Information Security, Big and Open Data, Cyber Security and Defense, Artificial Intelligence, Computer and Software Engineering, Privacy, Biometrics, Innovation Culture Creation, IPv6, 5G, etc.
- now is the director of AI and Big Data Center of Gazi University, Ankara Turkey.

## **Big Data Analytics, Security and Privacy Issues in Smart Energy Systems**

**Summary:** Big data has great potential to provide opportunities not only many fields but also energy enhancing technical, organizational, social and economic gains and contributions. The current potential of applying big data approaches for better planning, managing, designing, and securing power grid operations are very challenging tasks and needs significant efforts. This talk will cover the issues of computational complexity, data security and privacy, cost, management, planning and integration of big data into energy and power grid systems and also focus on the key challenges in big data analytics, privacy and security issues.

## **Tutorial 2: Smart Grids for green and sustainable energy transition**

**Date : August 29, 2023- 14.30-15.30 PM**

**Organizer:** Prof. Youcef SOUFI, Echahid Larbi Tebessi University, Tebessa, Algeria



### **Biography:**

Professor Youcef SOUFI received the B.Eng. (1991) and Doctorate degrees from the University of Annaba, Algeria in Electrical Engineering. Since 2000, he has been with the Department of Electrical Engineering, Laboratory of Electrical Engineering at Echahid Larbi Tebessi University, Tebessa, Algeria, where: He is currently a full Professor in electrical engineering. His main and current major research interests include smart grids, Renewable energy, electrical machines control, power electronics and drives. He has published and co-authored more than 200 technical papers in scientific journals and conference proceedings since 2000. He is the member of editorial board of many journals, and the member of technical program committee / international advisory board / international steering committee of many international conferences. His email address is: youcef.soufi@univ-tebessa.dz.

### **Smart Grids for green and sustainable energy transition**

**Summary:** Smart Grid (SG) is now the buzzword in the power industry all over the world. The rise of smart grid is a boon not only to society as a whole but to all who are involved in the electric power industry, its customers, and its many stakeholders. It presents one of the most significant evolutionary changes in power transmission and distribution. SGs are advanced technologies based on the intensive use of IT and communication technologies over the entire generation, transmission, and distribution systems of the electricity sector. They are generally recognized as an enabling technology for achieving sustainable energy transitions with the potential to support a broad range of advanced energy technologies on both the supply-side of the integration of a large scale of renewable energy and distributed energy sources and demand-side of energy management.

The modernization of electric grids toward a smart grid is being carried out to improve reliability, facilitate integration of renewable energies, and improve power consumption management. Also, the electric power systems throughout the world are facing radical change stimulated by the pressing need to decarbonize electricity supply, to replace ageing assets and to make effective use of rapidly developing information and communication technologies. Thus, the development and the implementation of a smart grid for power supply is one of the pressing issues in modern energy economy and it is promoted by many governments as a way of handling energy independence, global warming and security of supply based on the introduction of modern communications infrastructure, sensing, metering technologies, and modern energy management techniques based on the optimization of demand, energy and network availability. This presentation addresses critical issues on smart grid challenges, development, and opportunities where the main objective of this presentation is to provide a contemporary look at the current state of the art in smart grid as well as to provide a better understanding of the technologies, potential advantages and research challenges of the smart grid and provoke interest among the research community to further explore this promising research area.

## Tutorial 3: Enhancing Dependability in Cyber-Physical Renewable Energy Systems

Date : August 29, 2023- 15.50-16.50 PM

Organizer: : Prof. Youmin Zhang, Department of Mechanical, Industrial and Aerospace Engineering  
Concordia University, Montreal, Canada



### Biography:

Youmin Zhang is a Professor with the Department of Mechanical, Industrial & Aerospace Engineering at Concordia University in Montreal, Canada. He is also a licensed Professional Engineer (P.Eng.) registered in Ontario. He received his Ph.D. degree from Northwestern Polytechnical University, China, in 1995. He has authored 8 books and more than 600 journal and conference papers. His research interests include condition monitoring, fault detection and diagnosis (FDD) and fault-tolerant control (FTC), cooperative guidance, navigation, and control (GNC) of single and multiple autonomous/unmanned vehicles, and advanced diagnosis, prognosis, and health management of safety-critical systems with applications to renewable energies, smart grids, and smart cities towards goal of electrification for resilient and decarbonized systems and communities. Dr. Zhang's research has drawn considerable attention in the field. His publications have received 24,577 citations at Google Scholar with an h-index of 74 and i10- index of 361, and 12,596 citations with 548 Core Collection publications and an h-index of 57 at Web of Science (WoS). His comprehensive review paper published in Annual Reviews in Control in 2008 on "Bibliographical Review on Reconfigurable Fault-tolerant Control Systems" (see here) has gained significant impact in the field worldwide, with currently 2,706 citations at Google Scholar and 1,608 citations at WoS. Dr. Zhang is a Fellow of IEEE and a Fellow of Canadian Society of Mechanical Engineering (CSME), as the President of International Society of Intelligent Unmanned Systems (ISIUS) during 2019-2022, and a member of the Technical Committee for several scientific societies including IEEE and IFAC. He has been an Editor-in-Chief, an Editor-at-Large, an Editorial (Advisory) Board Member, and an Associate Editor for several international journals, including as a Board Member of Governors and Regional Representative (North America) for the Journal of Intelligent & Robotic Systems, and an Associate Editor for the IEEE Transactions on Neural Networks & Learning Systems, IEEE Transactions on Industrial Electronics, and IEEE Transactions on Circuits and Systems - II: Express Briefs. He has also served as (Honorary) General Chair, Program Chair of several autonomous/unmanned systems, renewable energies, and smart cities relevant international conferences. More detailed information can be found at <http://users.encs.concordia.ca/~ymzhang/>.

### Enhancing Dependability in Cyber-Physical Renewable Energy Systems

**Summary:** Cyber-physical renewable energy systems (RESs), comprising wind turbines, solar photovoltaic (PV) arrays, and batteries integrated into microgrids, form the backbone of the next-generation electricity grid, commonly referred to as the "smart grid." Enhancing the dependability (safety, security, reliability, availability, and resilience) of these RESs, both on the physical and cyber fronts, demands innovative approaches for physical-faults and cyber-attacks monitoring and fault-tolerant and attack-resilient control. Despite their distinct origins, both faults and cyber-attacks can have comparable consequences, leading to increased operating costs, physical damages, and potential cascading failures. Swift identification and differentiation of these incidents are essential to implement timely corrective actions and limit system damages.

This tutorial focuses on the critical importance of early detection, diagnosis, and mitigation of physical faults and cyber-attacks in cyber-physical RESs and microgrids to facilitate their dependable operation towards a future goal of electrification for resilient and decarbonized systems and communities fighting with climate change and global warming. Recent advancements in digitalization and the Industrial Internet of Things (IIoT) have enabled robust intrusion detection and cyber-attack mitigation countermeasures, offering unprecedented advantages. Moreover, the tremendous computational power available in modern computers has propelled artificial intelligence (AI) and advanced machine learning capabilities to new heights. Leveraging these developments, we can efficiently convert vast and multidimensional sensor data into valuable insights, enabling intelligent monitoring and reliable control of energy and power systems.

The tutorial delves into the following key objectives:

- Explore the critical challenges associated with physical-faults and cyber-attacks in RESs within microgrids and smart grids;
- Introduce existing techniques and tools for condition monitoring, control, and health management of wind turbines and solar PV systems in microgrids;
- Present an in-depth review of state-of-the-art techniques for condition monitoring, fault-tolerant control, and attack-resilient control of wind turbines and solar PV systems in microgrids;
- Illustrate practical design approaches through several comprehensive case studies;
- Discuss important challenges, unresolved issues, and outline future directions in this dynamic and burgeoning research and development domain.

- Duration:

The tutorial will last for 90 minutes (1.5 hours). The timing of each presentation is detailed in the next section (i.e., Outline).

- Outline:

The tutorial will include the following 5 main sections in line with the overall theme of the tutorial.

1) "Introduction to the Tutorial Session" (15 minutes incl. Q&A: Prof. Zhang)

In this presentation, the content of tutorial will be outlined and the broad areas of condition monitoring, fault-tolerant and attack-resilient control will be introduced and discussed.

2) "Condition Monitoring of Wind Turbines and Wind Farms" (25 minutes incl. Q&A: Prof. Badihi)

The presentation begins with an introduction to individual wind turbine and entire wind farm condition monitoring including new and emerging state-of-the-art techniques and tools. Then, it continues with two case studies for wind turbines and wind farms including detailed design and implementation steps.

3) "Fault-Tolerant and Attack-Resilient Control of Wind Turbines" (20 minutes incl. Q&A: Prof. Zhang)

This presentation begins with the classifications and objectives of control at both individual wind turbine and entire wind farm levels; covering wind turbine performance and fatigue load control, as well as wind farm power quality and power dispatch control. In continuation, various passive and active fault-tolerant control approaches and attack-resilient control schemes in wind turbines and wind farms will be discussed with three case studies.

4) "Attack-Resilient Control of Solar PV Systems in Microgrids" (20 minutes incl. Q&A: Prof. Badihi)  
This presentation begins with an introduction to microgrids and the role of solar PV systems in them. The possible physical-faults and cyber-attacks related to PV systems will be detailed and analysed. Accordingly, various schemes under different case studies will be presented to demonstrate the diagnosis and mitigation of physical-faults and cyber-attacks in hybrid microgrids with solar PV integration.

5) "Summary, Discussion, Open Problems, Future Issues, and Feedback" (10 minutes: Prof. Zhang, and Prof. Badihi)

Lastly, the tutorial will be closed with a summary and discussion on the open problems and future directions in this field.

- Motivation and Focus:

The proposed tutorial addresses an interesting and active research topic related to the important aspects of safety, security, reliability, availability, and resilience of cyber-physical renewable energy systems in evolving smart grids. It enhances technical information exchange and transfer, which also plays an important role to keep the researchers up-to-date with the latest developments in this field. In terms of intended audience, the tutorial is oriented towards graduated students, researchers and engineers/practitioners from both academia and industry, who are interested in cyber-physical renewable energy systems, microgrids and smart grids and in learning more about condition monitoring, health management, advanced fault-tolerant and attack-resilient control, and their applications in energy and power systems. The tutorial is also suitable for any academic faculty in the field of energy and power who would like to become more familiar with condition monitoring and control theories and applications.



## Tutorial 4: Enhancing Dependability in Cyber-Physical Renewable Energy Systems

Date : August 29, 2023- 16.50-17.50 PM

**Organizer:** Assoc. Prof. Hamed Badihi, College of Automation Engineering, Nanjing University of Aeronautics and Astronautics Nanjing, Jiangsu, China



### Biography:

Hamed Badihi is an Associate Professor with the College of Automation Engineering, Nanjing University of Aeronautics and Astronautics (NUAA), Nanjing, China. Prior to this position, he was a Horizon Postdoctoral Fellow with the Department of Mechanical, Industrial & Aerospace Engineering at Concordia University in Montreal, Canada where he also received his Ph.D. degree in Mechanical Engineering in 2016. His research interests include all aspects of condition monitoring, fault diagnosis and prognosis, and fault-tolerant and attack-resilient control of cyber-physical renewable energy systems. Specific research areas include wind turbines and wind farms, solar photovoltaic systems, microgrids, and smart grids. His research on wind energy application has produced impactful results, published in more than 50 leading journals and international conference proceedings. He is the first author of the paper "A Comprehensive Review on Signal-Based and Model-Based Condition Monitoring of Wind Turbines: Fault Diagnosis and Lifetime Prognosis," which was published in the prestigious Proceedings of the IEEE. He is currently an Editor and Guest Editor for several journals, and a member of the technical/program committees of several international conferences.

## Enhancing Dependability in Cyber-Physical Renewable Energy Systems

**Summary:** Cyber-physical renewable energy systems (RESs), comprising wind turbines, solar photovoltaic (PV) arrays, and batteries integrated into microgrids, form the backbone of the next-generation electricity grid, commonly referred to as the "smart grid." Enhancing the dependability (safety, security, reliability, availability, and resilience) of these RESs, both on the physical and cyber fronts, demands innovative approaches for physical-faults and cyber-attacks monitoring and fault-tolerant and attack-resilient control. Despite their distinct origins, both faults and cyber-attacks can have comparable consequences, leading to increased operating costs, physical damages, and potential cascading failures. Swift identification and differentiation of these incidents are essential to implement timely corrective actions and limit system damages.

This tutorial focuses on the critical importance of early detection, diagnosis, and mitigation of physical faults and cyber-attacks in cyber-physical RESs and microgrids to facilitate their dependable operation towards a future goal of electrification for resilient and decarbonized systems and communities fighting with climate change and global warming. Recent advancements in digitalization and the Industrial Internet of Things (IIoT) have enabled robust intrusion detection and cyber-attack mitigation countermeasures, offering unprecedented advantages. Moreover, the tremendous computational power available in modern computers has propelled artificial intelligence (AI) and advanced machine learning capabilities to new heights. Leveraging these developments, we can efficiently convert vast and multidimensional sensor data into valuable insights, enabling intelligent monitoring and reliable control of energy and power systems.

The tutorial delves into the following key objectives:

- Explore the critical challenges associated with physical-faults and cyber-attacks in RESs within microgrids and smart grids;
- Introduce existing techniques and tools for condition monitoring, control, and health management of wind turbines and solar PV systems in microgrids;
- Present an in-depth review of state-of-the-art techniques for condition monitoring, fault-tolerant control, and attack-resilient control of wind turbines and solar PV systems in microgrids;
- Illustrate practical design approaches through several comprehensive case studies;
- Discuss important challenges, unresolved issues, and outline future directions in this dynamic and burgeoning research and development domain.

- Duration:

The tutorial will last for 90 minutes (1.5 hours). The timing of each presentation is detailed in the next section (i.e., Outline).

- Outline:

The tutorial will include the following 5 main sections in line with the overall theme of the tutorial.

1) "Introduction to the Tutorial Session" (15 minutes incl. Q&A: Prof. Zhang)

In this presentation, the content of tutorial will be outlined and the broad areas of condition monitoring, fault-tolerant and attack-resilient control will be introduced and discussed.

2) "Condition Monitoring of Wind Turbines and Wind Farms" (25 minutes incl. Q&A: Prof. Badihi)

The presentation begins with an introduction to individual wind turbine and entire wind farm condition monitoring including new and emerging state-of-the-art techniques and tools. Then, it continues with two case studies for wind turbines and wind farms including detailed design and implementation steps.

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This presentation begins with the classifications and objectives of control at both individual wind turbine and entire wind farm levels; covering wind turbine performance and fatigue load control, as well as wind farm power quality and power dispatch control. In continuation, various passive and active fault-tolerant control approaches and attack-resilient control schemes in wind turbines and wind farms will be discussed with three case studies.

4) "Attack-Resilient Control of Solar PV Systems in Microgrids" (20 minutes incl. Q&A: Prof. Badihi)

This presentation begins with an introduction to microgrids and the role of solar PV systems in them. The possible physical-faults and cyber-attacks related to PV systems will be detailed and analysed. Accordingly, various schemes under different case studies will be presented to demonstrate the diagnosis and mitigation of physical-faults and cyber-attacks in hybrid microgrids with solar PV integration.

5) "Summary, Discussion, Open Problems, Future Issues, and Feedback" (10 minutes: Prof. Zhang, and Prof. Badihi)

Lastly, the tutorial will be closed with a summary and discussion on the open problems and future directions in this field.

- Motivation and Focus:

The proposed tutorial addresses an interesting and active research topic related to the important aspects of safety, security, reliability, availability, and resilience of cyber-physical renewable energy systems in evolving smart grids. It enhances technical information exchange and transfer, which also plays an important role to keep the researchers up-to-date with the latest developments in this field. In terms of intended audience, the tutorial is oriented towards graduated students, researchers and engineers/practitioners from both academia and industry, who are interested in cyber-physical renewable energy systems, microgrids and smart grids and in learning more about condition monitoring, health management, advanced fault-tolerant and attack-resilient control, and their applications in energy and power systems. The tutorial is also suitable for any academic faculty in the field of energy and power who would like to become more familiar with condition monitoring and control theories and applications.

# SHORT PROGRAM

Program Summary of ICERA 2023, August 29 - September 1, 2023, Oshawa, Canada			
AUGUST 29, 2023 (TUESDAY)	AUGUST 30, 2023 (WEDNESDAY)	AUGUST 31, 2023 (THURSDAY)	SEPTEMBER 01, 2023 (FRIDAY)
	09:30-10:00 Opening Ceremony and Speeches		09:30-10:30 Keynote Speech-V (60 Min)
	10:00-11:00 Keynote Speech-I (60 Min)	10:00-11:00 Keynote Speech-III (60 Min)	10:30-10:40 <b>COFFEE BREAK</b>
	11:00-11:10 <b>COFFEE BREAK</b>	11:00-11:10 <b>COFFEE BREAK</b>	P61
10:00-17:00 <b>REGISTRATION</b>	11:10-12:10 Keynote Speech-II (60 Min)	11:10-12:10 Keynote Speech-IV (60 Min)	10:40-12:00 Session-11 4 PAPERS (4*20=80 Min)
	12:10-13:00 <b>LUNCH</b>	12:10-13:00 <b>LUNCH</b>	P62 P63 P64
			P65 Session-12 Online 4 PAPERS (4*20=80 Min)
			P66 P67 P68 <b>LUNCH</b>

# SHORT PROGRAM

Program Summary of ICERA 2023, August 29 - September 1, 2023, Oshawa, Canada												
		AUGUST 29, 2023 (TUESDAY)		AUGUST 30, 2023 (WEDNESDAY)		AUGUST 31, 2023 (THURSDAY)		SEPTEMBER 01, 2023 (FRIDAY)				
13:30-14:30		Tutorial I (60 Min)				P37	P43	P69	P75	Session-13 6 PAPERS (6*20=120 Min)		
14:30-15:30		Tutorial II (60 Min)		13:00-15:00	13:00-15:00	P38	P44	P70	P76			13:00-15:00
15:30-15:50		COFFEE BREAK		COFFEE BREAK		COFFEE BREAK		COFFEE BREAK		COFFEE BREAK		
15:50-16:50		Tutorial III (60 Min)				P19	P20	P81	P87	Session-15 6 PAPERS (6*20=120 Min)		
16:50-17:50		Tutorial IV (60 Min)		15:00-15:10	15:10-17:10	P21	P22	P82	P88			15:10-17:10
17:00-17:30		WELCOME RECEPTION				COFFEE BREAK		COFFEE BREAK		Session-16 Online 6 PAPERS (6*20=120 Min)		
				17:10-17:20	17:20-19:00	15:00-15:10	15:10-17:10	P23	P24			P83
18:00-19:30				16:30-18:45	16:30-18:45	P25	P26	P84	P90	GALA DINNER		
		17:20-19:00	17:20-19:00	18:30-19:45	18:30-19:45	P27	P28	P85	P91			17:10-18:00
		COFFEE BREAK		COFFEE BREAK		P29	P30	P86	P92	CLOSING CEREMONY		



# CONFERENCE PROGRAM

<b>Date: August, 29 2023</b>	
10:00–17:00	REGISTRATION
<b>Date: August, 29 2023</b>	
<b>ONLINE PRESENTATION</b>	
<b>TUTORIALS</b>	
<b>CHAIRS: Erdal Bekiroglu, Wahiba Yaici</b>	
13:30-14:30	TUTORIAL-1 Prof. Seref Sagiroglu, Gazi University, Ankara, Turkiye <b>"Big Data Analytics, Security and Privacy Issues in Smart Energy Systems"</b>
14:30-15:30	TUTORIAL-2: Prof. Youcef SOUFI, Echahid Larbi Tebessi University, Tebessa, Algeria <b>"Smart Grids for green and sustainable energy transition"</b>
15:30-15:50	<b>COFFEE BREAK</b>

<b>Date: August, 29 2023</b>	
<b>TUTORIALS</b>	
<b>CHAIRS: Lamine Doumbia Mamadou , Anindita Golder</b>	
<b>ORAL PRESENTATION</b>	
15:50-16:50	TUTORIAL-3: Prof. Youmin Zhang, Department of Mechanical, Industrial and Aerospace Engineering Concordia University, Montreal, Canada <b>"Enhancing Dependability in Cyber-Physical Renewable Energy Systems"</b>
16:50-17:50	TUTORIAL-4: Assoc. Prof. Hamed Badihi, College of Automation Engineering, Nanjing University of Aeronautics and Astronautics Nanjing, Jiangsu, China <b>"Enhancing Dependability in Cyber-Physical Renewable Energy Systems"</b>
<b>Date: August, 29 2023</b>	
18:00-19:30	<b>WELCOME RECEPTION</b>

<b>Date: August 30, 2023</b>	
09:30-10:00	<p style="text-align: center;">Opening Ceremony and Speeches:</p> <ul style="list-style-type: none"> <li>-Mr. Yoshinobu Higashi, Former Japan Ambassador to Romania</li> <li>-Mr. Hidehiko Kikuchi, Corporate Senior Advisor to TMEIC, Japan</li> <li>-H.E. Ambassador Kanji Yamanouchi, Embassy of Japan in Canada</li> <li>-Prof. Sheldon Williamson, General Chair, ICRERA 2023</li> <li>-Prof. Adel Nasiri, General Co-Chair, ICRERA 2023</li> <li>-Prof. Fujio Kurokawa, General Co-Chair, ICRERA 2023</li> <li>-Prof. Ilhami Colak, General Co-Chair, ICRERA 2023</li> </ul> <p style="text-align: center;"><b>Chairs: Professor Dan M. IONEL, Professor Nobumasa MATSUI</b></p>
<b>KEYNOTE</b>	
10:00-11:00	<p style="text-align: center;"><b>Speaker: Ms. Noriko Kawakami TMEIC, Japan</b></p> <p style="text-align: center;"><b>Chairs: Professor Fujio KUROKAWA, Professor Sheldon WILLIAMSON</b></p>
<b>COFFEE BREAK</b>	
<b>KEYNOTE</b>	
11:10-12:10	<p style="text-align: center;"><b>Speaker: Professor Udaya Madawala, University of Auckland, New Zealand</b></p> <p style="text-align: center;"><b>Chairs: Professor Adel NASIRI, Professor Seref SAGIROGLU</b></p>
<b>LUNCH</b>	
12:10-13:00	

Date: August 30, 2023			
ORAL PRESENTATIONS		ONLINE PRESENTATIONS	
SESSION 1	CHAIRS: Yudai Furukawa, Korhan Kayisli	SESSION 2	CHAIRS: Erdal Irmak, Sevki Demirbas
13:00-13:20	<b>ID:3 Effective Non-Intrusive Load Monitoring Through IoT Building Data Using Akima Interpolation and Deep Learning LSTM Method</b> Jura Arkhangelski (University of Paris Est Creteil, Certes Lab.); Abdou Tankari Mahamadou (University of Paris Est Creteil, Certes Lab.); Lefebvre Gilles (@University of Paris Est Creteil, Certes Lab.)	13:00-13:20	<b>ID:199 The Negative Social Impacts of Renewable Energy: A Key Consideration for a Successful Energy Transition</b> Hafize Nurgul Durmus Senyapar (Gazi University)*; Ramazan Bayindir (Gazi University)
13:20-13:40	<b>ID:110 FPGA-based FDNE Models for the Accurate Real-time Simulation of Power Systems in Aircrafts</b> Fahimeh Hajzaadeh (Polytechnique Montréal)*; Loïc Alavoine (Polytechnique Montréal); Tarek Ould-Bachir (Polytechnique Montréal); Frédéric Sirois (Polytechnique Montréal); Jean-Pierre David (Polytechnique Montréal)	13:20-13:40	<b>ID:200 Digital Twin Approach for Current Protection Relays: Utilizing Real-Time Data for Optimal Protection</b> Mustafa Erisan (Contactus Global Technology Co.); Tervik Kutay Celebioglu (TOBB University of Economics and Technology); Erdal Irmak (Gazi University)*
13:40-14:00	<b>ID:65 SiC MOSFET inverter design, considering with unplanned events for electric aviation</b> Simon Kim (Infineon Technologies Korea)*; Diego Raffo (Infineon Technologies USA); Perry Rothenbaum (Infineon Technologies USA); Paul Ruggier (Neuronics Solutions)	13:40-14:00	<b>ID:95 Assessing the Impact of Sociopolitical Factors on the Rollout of Freight Electric Vehicles</b> Mariacristina Roscia (University of Bergamo, Italy)*; Ankit Patel (University of Minho CALG)
14:00-14:20	<b>ID:29 A DC-DC Converter with Multistage Boost Input and High Voltage Gain for Solar PV Applications</b> Mohammad Vafadar (Islamic Azad university Nour branch)*; Hossein Vafadar (Islamic Azad university Jouybar branch); Adel Nasiri (University of South Carolina)	14:00-14:20	<b>ID:92 Forecasting photovoltaic energy for a winter house using a Hybrid Deep Learning Model</b> Youssef JOUANE (CESI LINEACT)*; Mame Cheikh SOW (CESI LINEACT); Oussama OUSSOUS (CESI LINEACT); Nadia VONTOBEL (Vontobel Architekten); Mourad ZGHAL (CESI LINEACT)
14:20-14:40	<b>ID:30 Design of High-Frequency CC/CV Output Load-Independent WPT System</b> Jiaxin Yan (Chiba University)*; Wenqi Zhu (Chiba University); Akihiro Konishi (Chiba University); Xiuqin Wei (NIL); Kien Nguyen (Chiba University); Hiroo Sekiya (Chiba University)	14:20-14:40	<b>ID:183 Design and Magnetic Analysis of a Grounding Transformer Compatible with Wind Power Systems</b> Erdal Bekiroglu (Bolu Abant izzet Baysal University)*; Elif Demiral (Astor AS); Muhammed Duran Yazar (Bolu Abant izzet Baysal University)
14:40-15:00	<b>ID:184 Performance Evaluation of Overcurrent and Directional Overcurrent Relays under Harmonic and Imbalance Conditions: A Case Study of a 132/20 kV Substation</b> Mohsen Kavesh (Western University)*; Ebadollah Kamyab (Khorasan Regional Electric Company (KREC)); Danial Moghadas-angizan (Khorasan Regional Electric Company (KREC)); Mohammad Ali Safdari (Khorasan Regional Electric Company (KREC))	14:40-15:00	<b>ID:50 Enhancing Safety and Security in Renewable Energy Systems within Smart Cities</b> Mayur Rele (Parachute Health)*; Dipti Patil (University of Cumberlands)
15:00-15:10	<b>COFFEE BREAK</b>	15:00-15:10	<b>BREAK</b>

Date: August 30, 2023		ONLINE PRESENTATIONS	
ORAL PRESENTATIONS		ONLINE PRESENTATIONS	
CHAIRS: Abdou Tankari Mahamadou, Erdal Bekiroglu		CHAIRS: Erdal Irmak, Orhan Kaplan	
SESSION 3	SESSION 4	SESSION 4	SESSION 4
15:10-15:30	ID:32 Field Testing of Residential Bidirectional Electric Vehicle Charger for Power System Applications Shivam Saxena (University of New Brunswick)*; Hany Farag (York University); Khunsha Nasr (York University); Leigh St. Hilaire (Volta Research)	15:10-15:30	ID:191 A Novel Sliding Mode Control Based on Super Twisting Reaching Law for PMSM Speed Controller with Fixed-Time Disturbance Observer Ferhat Bodur (Gazi University), Orhan KAPLAN (Gazi University)*
15:30-15:50	ID:157 Investigations on An Advanced Six-Phase Neutral Point Less Multi-Level Inverter Sahil Jaglan (Concordia University)*; Daniel Legrand Mon Nzongo (Concordia University); Chunyan Lai (Concordia University)	15:30-15:50	ID:78 Dynamic Performance Assessment through Simulated Model of Photovoltaic Water Pumping for Off-Grid Communities Sohaib Zafar (Punjab University of Technology)*; Muhammad Khalid (King Fahd University of Petroleum and Minerals (KFUPM))
15:50-16:10	ID:38 Power quality challenges and urban microgrid based grid resiliency - Case of Niamey City electrical grid Abdou Tankari Mahamadou (University of Paris Est Creteil, Certes Lab.)*; DAOUA Abdourahimoun (Abdou Moumouni University of Niamey); Arkhangelski Jura (UPEC); Lefebvre Gilles (University of Paris Est Creteil, Certes Lab.); Drame Aboubacar (University of Paris Est Creteil, Certes Lab.); Garba Marou (High School EMIG)	15:50-16:10	ID:147 Exploring the Performance of QDIBSC for Spherical QD Structure Kawshik Nath (Chittagong University of Engineering & Technology)*; Bibekamanda Nath (Green University of Bangladesh); Md. Samiul Islam (Chittagong University of Engineering & Technology); Prof. Dr. Martin (CUET)
16:10-16:30	ID:66 Design proposal with an integrated solution for harmonic regulation in a dryer machine Simon Kim (Infineon Technologies Korea)*; Lei Han (Infineon technologies USA); David Divins (Infineon technologies USA); Paul Ruggier (Neutronics Solutions)	16:10-16:30	ID:166 Using LXP for Green Deal: A New Approach Betül ERSOZ (Gazi University)*; Halil Ibrahim BULBUL (Gazi University); Seref SAGIROGLU (Gazi University)
16:30-16:50	ID:126 Internet of Things (IoT) Monitoring and Control for Smart Heating and Cooling in a Residential Building Wahiba Yaici (CanmetENERGY Research Centre / Natural Resources Canada)*; Evgueny Entchev (CanmetENERGY Research Centre / Natural Resources Canada); Michela Longo (Politecnico di Milano); Andres Annuk (Estonian University of Life Sciences)	16:30-16:50	ID:124 Hydrogen production by water electrolysis: review Hassan Mabrak (University Hassan II)*; Youssef Naimi (University of Hassan II Casablanca, Faculty of Sciences Ben M'sik, Casablanca); Youssef Naimi (Physical Chemistry of Materials Laboratory, Ben M'Sick Faculty of Science, Hassan II University of Casablanca - Casablanca); Siham ELMAZOUZI (University of Hassan II Casablanca, Faculty of Sciences Ben M'sik, Casablanca); Driss Takky (Physical Chemistry of Materials Laboratory, Ben M'Sick Faculty of Science, Hassan II University of Casablanca, Casablanca); ILHAMI COLAK (Nisantasi University)
16:50-17:10	ID:47 Analysis of the transient dynamics for reconnecting a multi-inverter GFM system to the power grid Rutvika Manohar (Mitsubishi Electric)*; Koki Matsumoto (Mitsubishi Electric); Sadayuki Inoue (Mitsubishi Electric); Tomoyuki Kawakami (Mitsubishi Electric)	16:50-17:10	ID:120 MPPT with INFO Algorithm Tuned Nonlinear PI Control for PV Array Kemal Celik (Graduate School of Natural and Applied Sciences, Gazi University); ipek Cetinbas (Eskişehir Osmangazi University); Mehmet Demirtas (**Faculty of Technology, Gazi University)**
17:10-17:20	COFFEE BREAK	17:10-17:20	BREAK

Date: 30 August 2023	
ORAL PRESENTATIONS	
SESSION 5	CHAIRS: Y uji Mizuno, Nihat Ozturk
17:20-17:40	<b>ID:203 Assessment of Land and Renewable Energy Resource Potential for Regional Power System Integration with ML Spatio-temporal Clustering</b> Rosemary E. Alden (University of Kentucky)*; Claire Halloran (University of Oxford); Donovan D Lewis (University of Kentucky); Dan M. Ionel (University of Kentucky); Malcolm McCulloch (University of Oxford)
17:40-18:00	<b>ID:93 A Forecasting Method of Peak-Cut of Power Demand using LSTM at A Clinic</b> Tomoya inagata (Nagasaki institute of Applied Science); Yuji Mizuno (Osaka Electro-Communication University)*; Keita Matsunaga (Nagasaki institute of Applied Science); Fujio Kurokawa (Nagasaki institute of Applied Science); Masaharu Tanaka (Nagasaki institute of Applied Science); Nobumasa Matsui (Nagasaki institute of Applied Science)
18:00-18:20	<b>ID:96 Spatio-Temporal Short Term Load Forecasting Using Graph Neural Networks</b> Haris Mansoor (Lahore University of Management Sciences)*; Mahidha Shabbir (Lahore University of Management Sciences); Muhammad Yasir Ali (University of Lahore.); Huzafa Rauf (Lahore University of Management Sciences); Muhammad Khalid (King Fahd University of Petroleum and Minerals (KFUPM)); Naveed Arshad (Lahore University of Management Sciences)
18:20-18:40	<b>ID:122 Home Energy Management Systems (HEMS) Control Strategies Testing and Validation: Design of a Laboratory Setup for Power Hardware-in-the-loop (PHL) considering Multi-timescale Co-Simulation at the Smart Grids Test Lab, Morocco</b> Abdellah ROCHD (Green Energy Park)*; Mohamed LAAMIM (Green Energy Park); Aboubakr BENAZZOUC (Green Energy Park); Mohamed KISSAOUI (IESI Lab - ENSET Mohammedia); Abdelhadi RAHANI (IESI Lab - ENSET Mohammedia); Josep M. Guerrero (Aalborg University)
18:40-19:00	<b>ID:123 Qualitative model for an oxygen therapy system based on Renewable Energy</b> wilton edixon Agila (ESPOL)*; Gomer Abai Rubio (ESPOL); Livingston Miranda (ESPOL); Raul M. del Toro Matamoros (LERH, CAR-CSC)
19:00-19:20	<b>ID:125 Nonlinear Programming Optimization Towards Optimal Transition design in Model Free Predictive Control</b> Ahmad Darabi (Concordia University)*; Chunyan Lai (Concordia University)
ONLINE PRESENTATIONS	
SESSION 6	CHAIRS: Erdal Irmak, Erdal Bekiroglu
17:20-17:40	<b>ID:84 Load-Independent Class-E Inverter with a Class-D Rectifier</b> Soraki Alzawa (Chiba Institute of Technology)*; Xiuqin Wei (NII); Hiroo Sekiya (Chiba University)
17:40-18:00	<b>ID:134 Data Augmentation with ECAPA-TDNN Architecture for Automatic Speaker Recognition</b> Pinyan Li (Macao Polytechnic University)*; Lap Man Hoi (Macao Polytechnic University); Yapeng Wang (Macao Polytechnic University); Si Kei im (Macao Polytechnic University)
18:00-18:20	<b>ID:186 Design of Sliding Mode Controller for Load Frequency Control Using Particle Swarm and Grey Wolf Algorithms</b> Umit Cetinkaya (Gazi University)*; Sevki DEMIRBAS (Gazi University); SAMET AVIK (Gazi University); Ramazan Bayindir (Gazi University)
18:20-18:40	<b>ID:149 An Energy-Autonomous and Maintenance-Free Wireless Sensor Platform with LoRa Connectivity</b> Roberto La Rosa (STM); Lokman Boulebnane (University of Palermo); Daniele Croce (University of Palermo); Patrizia A Livreri (University of Palermo)*; Ilenia Tinnirello (University of Palermo)
18:40-19:00	<b>ID:89 Smart Feature Selection-based Machine Learning Framework for Calendar Loss Prediction of Li-Ion Electric Vehicle Battery</b> Huzafa Rauf (Lahore University of Management Sciences)*; MUHAMMAD SHUZUB GULL (Bahore University of Management Sciences); Muhammad Khalid (King Fahd University of Petroleum and Minerals (KFUPM)); Naveed Arshad (Lahore University of Management Sciences)
19:00-19:20	<b>ID:205 The Role of Communication and Social Marketing in The Implementation of Renewable Energy Policies and Strategies</b> Hafize Nurgul Durmus Senyapar (Gazi University); Ramazan Bayindir (Gazi University)*

Date: August 31, 2023	
KEYNOTE	
10:00-11:00	<p>Speaker: Professor Dan M. Ionel, IEEE Fellow, University of Kentucky, USA</p> <p>Chairs: Professor Adel NASRI, Professor Halil Ibrahim BULBUL</p>
COFFEE BREAK	
KEYNOTE	
11:10-12:10	<p>Speaker: Professor Hiroo Sekiya, Chiba University, Japan</p> <p>Chairs: Professor Babak Nahid-MOBARAKEH, Professor Ramazan BAYINDIR</p>
LUNCH	
12:10-13:00	

Date: August 31, 2023

ORAL PRESENTATIONS		ORAL PRESENTATIONS	
SESSION 7	CHAIRS: Sevki Demirbas, Masaki Nakamura	SESSION 8	CHAIRS: Korhan Kayisli, Hiroshi Takami
13:00-13:20	<b>ID:56 Output Current Characteristics of Three-Phase Isolated Secondary-Resonant Single-Active-Bridge DC-DC Converter for Output Voltage Variation</b> Atsushi Nishio (Nagoya institute of Technology)*; Kohei Budo (Nagoya institute of Technology); Takaharu Takeshita (Nagoya institute of Technology)	13:00-13:20	<b>ID:130 Penetration Evaluation of Residential EV Chargers Considering Network Parameters and Constraints</b> Adel Nasiri (University of South Carolina)*; Seyed Amir Hosseini (Isfahan University of Technology); Seyed Hossein Hesamedin Sadeghi (Amirkabir University of Technology)
13:20-13:40	<b>ID:57 Energy Management System of Electric Motorcycles for Power Boost</b> Momoe Sakai (Nagoya institute of Technology)*; Takaharu Takeshita (Nagoya institute of Technology)	13:20-13:40	<b>ID:131 Liquid Cooling System for a High Power, Medium Frequency, and Medium Voltage Isolated Power Converter</b> Adel Nasiri (University of South Carolina)*; Hooman Taghavi (University of South Carolina); Ahmad El Shafei (UW-Milwaukee)
13:40-14:00	<b>ID:58 Implementation of Digital Twin-Assisted Condition Monitoring and Fault Diagnosis for Wind Turbines</b> MINH-CHAU DINH (Changwon National University)*; MANH-TUAN NGO (Changwon National University); Changyun Kim (Changwon National University); Seok-Ju Lee (Changwon National University); IN-KEUN YU (Changwon National University); MINWON PARK (Changwon National University)	13:40-14:00	<b>ID:201 Fault Tolerant Electric Machine Concept for Aircraft Propulsion with PM Rotor and DC Current Stator Dual-Stage Excitation</b> Donovin D Lewis (University of Kentucky); Oluwaseun Badewa (University of Kentucky); Ali Mohammadi (University of Kentucky); Matin Vatani (University of Kentucky); Dan M. Ionel (University of Kentucky)*
14:00-14:20	<b>ID:59 High Efficient DC Power Supply System for Electric Vehicle to Green Base Station</b> Masaki Nakamura (NTT DOCOMO, INC.)*; Yuta Toyama (NTT DOCOMO, INC.)	14:00-14:20	<b>ID:54 Experimental Verification of SPMSM with Active LC Filter by IRM-ILQ Current Control</b> Kazuki Abe (Shibaura institute of Technology)*; Ayumu Okubo (Shibaura institute of Technology); Yoshiaki Sasaki (Shibaura institute of Technology); Hiroshi Takami (Shibaura institute of Technology); Fuminori Ishibashi (Shibaura institute of Technology)
14:20-14:40	<b>ID:60 Experimental Verification of Speed Control of IM Fed by Sinusoidal-VSI with Active LC-IPF via IRM-ILQ Control</b> Yoshiaki Sasaki (Shibaura institute of Technology)*; Ayumu Okubo (Shibaura institute of Technology); Kazuki Abe (Shibaura institute of Technology); Hiroshi Takami (Shibaura institute of Technology); Fuminori Ishibashi (Shibaura institute of Technology); Masashi Nakamura (Toshiba Mitsubishi-Electric Industrial Systems Corporation); Toshiaki Oka (Toshiba Mitsubishi-Electric Industrial Systems Corporation)	14:20-14:40	<b>ID:135 Practical Strategy for Improving Harmonics and Power Factor Using a Three-Phase Rooftop Photovoltaic Inverter</b> Mohsen Kaveh (Western University)*; Saeed Habibi (Missouri University of Science and Technology); Frouz Badrkhan Ajaei (University of Western Ontario); Shahrokh Farhang (University of Tehran)
14:40-15:00	<b>ID:61 DC-Link Voltage Control Based on Adaptive IRM-ILQ for Stirling Engine Power Supply Vehicle</b> Fangcheng Zhang (Shibaura institute of Technology)*; Chi Kien Do (Hanoi University of Science and Technology); Hiroshi Takami (Shibaura institute of Technology)	14:40-15:00	<b>ID:194 Experimental evaluation of piezoelectric Vehicle Speed Sensor for smart highways: A Progress Report</b> Luay Y Taha (Penn State Altoona)*; Ivan Underwood (Penn State Altoona); Kara Bailen (Penn State Altoona); Francis Dellapenna (Penn State Altoona); Christopher Martin (Penn State Altoona); Hussein Abdeljawab (Wake Forest University); Sohail Anwar (Penn State Altoona)
15:00-15:10	<b>COFFEE BREAK</b>	15:00-15:10	<b>BREAK</b>



Date: August 31, 2023

ORAL PRESENTATIONS		ORAL PRESENTATIONS	
SESSION 9	CHAIRS: Mehmet Yesilbudak, Hideki Omori	SESSION 10	CHAIRS: Orhan Kaplan, V. Ferraio Pires
15:10-15:30	<b>ID:190 Design Methodology for a Medium Voltage Single Stage LLC Resonant Solar PV Inverter</b> Adel Nasiri (University of South Carolina)*; Parthkumar Bhuvela (University of South Carolina); Hooman Taghaw (University of South Carolina)	15:10-15:30	<b>ID:136 Enhancing Hierarchical Fault-Tolerant Cooperative Control in Wind Farms: The Application of Model Predictive Control and Control Reallocation</b> Saeedreza Jaddi (Concordia University); Hamed Badhi (Nanjing University of Aeronautics and Astronautics, College of Automation Engineering); Youmin Zhang (Concordia University)*
15:30-15:50	<b>ID:64 Low-temperature Waste Heat Recovery using Thermoelectric Power Generation at Small-Scale Filling Stations</b> Toshihiko Ishiyama (Hachinohe Institute of Technology)*; Fujio Akinaga (TOWOE SHOKAI Co., LTD.)	15:30-15:50	<b>ID:137 Resilient Dos Attack Detector Design for Cyber-Physical Systems</b> Jin Li (Concordia University); Youmin Zhang (Concordia University)*
15:50-16:10	<b>ID:145 A Novel Type of Wireless V2H with Seamless Two-way One-SW Converters and Asymmetric Power-Transfer Coils</b> Masahito Tsuno (Nichicon Co. Ltd.); Hideki Omori (Nagasaki Institute of Applied Science)*; Fujio Kurokawa (Nagasaki Institute of Applied Science)	15:50-16:10	<b>ID:16 A DC-DC Buck-Boost Converter with High Voltage Gain, Bipolar Output and Continuous Input Current</b> V. Ferraio Pires (ESTSetubal/IPS)*; Armando Cordeiro (SEL - IPL); Daniel Foito (ESTSetubal - IPS); José Silva (INESC-ID, IST, Universidade de Lisboa)
16:10-16:30	<b>ID:68 Voltage Control of DFIG-based Wind Turbine Generator in Rural Grid</b> Satoshi Sakurai (Sophia university)*; Ori Sakamoto (Sophia university)	16:10-16:30	<b>ID:42 Model Predictive Control of Dual Three-Phase Four-Leg Multilevel Inverter Supplying Photovoltaic Energy to Low-Voltage Unbalanced Grids</b> Joaquim Monteiro (SEL – Polytechnic Institute of Lisboa)*; V. Ferraio Pires (ESTSetubal/IPS)
16:30-16:50	<b>ID:109 Recent progress and performance analysis on durability evaluation and remaining useful life prediction technology development for the life extension of wind turbines in Korea</b> Seok-Ju Lee (Changwon National University)*	16:30-16:50	<b>ID:55 Assessing Electric Vehicle Charging Patterns: A Comprehensive Analysis of Charging Stations Usage</b> Alessandro Saldarini (Politecnico di Milano); Daniele Martini (Politecnico di Milano)*; Michela Longo (Politecnico di Milano); Federica Foidelli (Politecnico di Milano); Wahiba Yaici (CanmetENERGY Research Centre / Natural Resources Canada)
16:50-17:10	<b>ID:204 Input Voltage Unevenness Analysis in Series-Parallel DC-DC Converter</b> Yudai Furukawa (Nagasaki Institute of Applied Science)*; Kazuhiro Kaijwara (Nagasaki Institute of Applied Science); Daiki Shibahara (Nagasaki Institute of Applied Science); Nobumasa Matsui (Nagasaki Institute of Applied Science); Sho Tezuka (Isahaya Electronics Corporation); Yuji Ohta (Isahaya Electronics Corporation); Fujio Kurokawa (Nagasaki Institute of Applied Science)	16:50-17:10	<b>ID:8 Fault Detection and Diagnosis Technique for a SRM Drive Based on a Multilevel Converter Using a Machine Learning Approach</b> Tito Amaral (ESTSetubal/IPS)*; V. Ferraio Pires (ESTSetubal/IPS); Daniel Foito (ESTSetubal - IPS); Armando Pires (Polytechnical Institute of Setubal); J. F. Martins (FCT/UNL)
18:30-19:45	<b>GALA DINNER</b>		

Date: September 01, 2023			
KEYNOTE			
<p>Speaker: Professor Babak Nahid-Mobarakeh, McMaster University, Canada</p> <p>Chairs: Professor Brayima DAKYO, Professor Wahiba YAICI</p>			
COFFEE BREAK			
Date: September 01, 2023			
ORAL PRESENTATIONS		ONLINE PRESENTATIONS	
SESSION 11	CHAIRS: Wahiba Yaici, Mehmet Yesilbudak	SESSION 12	
10:40-11:00	ID:69 Verification of inverter loss and torque ripple for Permanent Magnet Synchronous Motor by Modified Trapezoidal Modulation vector control Ryoki Mitura (Osaka Institute of Technology)*	10:40-11:00	ID:150 Data Science Applications in Renewable Energy: Leveraging Big Data for Sustainable Solutions Ramakrishna nuvula s s (vit vellore)*
11:00-11:20	ID:70 Design criteria for an axial flux wind generator with Halbach array permanent magnets Giovanni Landi (University of Pisa)*, Antonino Musolino (University of Pisa); Luca Sani (DESTEC-University of Pisa); Claudia Simonelli (University of Pisa)	11:00-11:20	ID:151 Integrating Renewable Energy and Computer Science: Innovations and Challenges in a Sustainable Future Ramakrishna nuvula s s (vit vellore)*
11:20-11:40	ID:71 Prediction of Custom-built Bi-Facial PV Panel Output Including Weather Parameters Tanvir Mahmud Mahim (Brac University)*; Abu Hamed M.A. Rahim (Brac University); Md. Mosaddequr Rahman (Brac University)	11:20-11:40	ID:152 A review on demand side management system and its computer control methods Ramakrishna nuvula s s (vit vellore)*
11:40-12:00	ID:72 Double Slider-Modular Stator Linear Permanent Generator for Sea Wave Energy Harvesting: Experimental Validation Valentina Consolo (Università di Pisa)*; Luca Sani (DESTEC-University of Pisa); Marco Raugi (University of Pisa); Antonino Musolino (University of Pisa)	11:40-12:00	ID:154 MODELING, ANALYSIS of PI and PR BASED CONTROL STRATEGY for SINGLE PHASE QZSI Ramazan Bayindir (Gazi University)*; Seyfettin Vadi (Gazi University)
12:00-13:00		LUNCH	

Date: September 01, 2023	
ONLINE PRESENTATIONS	
SESSION 13	SESSION 14
ORAL PRESENTATIONS	ONLINE PRESENTATIONS
CHAIRS: Mamadou Lamine Doumbia, Nihat O	CHAIRS: Korhan Kayisli, Mehmet Yesilbudak
<p><b>ID:73 Vector Control of SRM Based on General Rotating Coordinate System Synchronized with Electrical Rotor Angle</b> Keitaro Kawarazaki (Tokyo University of Science)*; Ryoto Kojima (Tokyo University of Science); Nobukazu Hoshi (Tokyo University of Science)</p>	<p><b>ID:62 Assessing the Socio-Economic Potential of Electric Vehicle Charging Infrastructure: A Machine Learning based Approach for Marrakech-Safi Region, Morocco</b> BENAYAD B Mohamed (Faculty of Sciences - Casablanca)*; RHIVANE Hassan (Faculty of Sciences - Casablanca); Abdellilah ROCHD (Green Energy Park); MAANAN Mehdi (Faculty of Sciences - Casablanca); ELARABI hassan (Faculty of Sciences - Casablanca); HOURAN Nouriddine (Green Energy Park)</p>
<p><b>ID:74 Fundamental Study of a Novel Compact Hydrogen Generation System Fueled by Sodium Borohydride and Boric Acid</b> Moeko Kaku (Tokyo University of Science)*; Nobukazu Hoshi (Tokyo University of Science)</p>	<p><b>ID:106 TEG &amp; FUEL CELL hybrid system with Sliding Mode Control based MPPT</b> Rui Zafer Caglayan (Gazi University); Korhan KAYISLI (Gazi University)*; Abdelhakim Belkaid (Bordj Bou Areridj University); Ihami Colak (Nisantasi University)</p>
<p><b>ID:75 Totally Green Vehicle? Correlation the RES and load curves of CSs</b> Daniele Martini (Politecnico di Milano)*; Michela Longo (Politecnico di Milano); Dario Zaninelli (Politecnico di Milano)</p>	<p><b>ID:158 Integration of Electric Vehicles, Renewable Energy Sources, and IoT for Sustainable Transportation and Energy Management: A Comprehensive Review and Future Prospects</b> Ramakrishna nuvula s s (vit vellore)*</p>
<p><b>ID:156 Energy Management of an Autonomous Hybrid Wind-Photovoltaic System with Battery Storage</b> Simon Pierre il BETOKA ONYAMA (University of Quebec at Trois-Rivieres)*; Doumbia Mamadou Lamine (UQTR); Tahar Tafticht (Université du Québec en Abitibi-Témiscamingue (Québec, Canada))</p>	<p><b>ID:76 A novel shape of Bowtie Antenna arranged in a linear array for Energy Harvesting in MID-IR band</b> rocco citroni (University of Palermo)*</p>
<p><b>ID:77 Horizontally Stacked Pristine and Li-doped C12 Carbyne Ring as Hydrogen Storage Materials: a DFT Study</b> Al Rey C Villagracia (De La Salle University)*</p>	<p><b>ID:164 Key element to create Energy Communities Renewable (CER)</b> Mariacristina Roscia (University of Bergamo, Italy)*; Cristian LAZAROIU (University of Bucharest)</p>
<p><b>ID:86 An Optimized Switching Patterns for Reducing a Switching Loss of a Matrix Converter under Any Power Factor Conditions</b> Junnosuke Haruna (Utsunomiya University)*; Hirohito Funato (Utsunomiya University)</p>	<p><b>ID:188 Investigation of the circulating current based on the power sharing with the droop control method in the parallel-connected inverters</b> Seedef Degirmenci (Gazi University); Nihat Ozturk (Gazi University)*</p>
15:00-15:10	15:00-15:10
<b>COFFEE BREAK</b>	
<b>BREAK</b>	

Date: September 01, 2023		ONLINE PRESENTATIONS	
ORAL PRESENTATIONS		CHAIRS: Korhan Kayisli, Nihat Ozturk	
SESSION 15	CHAIRS: Wilton Edixon Agila, Haifil Ibrahim Bulbul	SESSION 16	CHAIRS: Korhan Kayisli, Nihat Ozturk
15:10-15:30	<b>ID:80 Optimizing Renewable Energy Integration for a Sustainable and Resilient Power Sector: Insights from LPDM Analysis</b> Haifiz Owais Ahmad Khan (LUMS)*, Tayyab Mahmood Chaudhry (Lahore University of Management Sciences); Umer Afaq (Lahore University of Management Sciences); Naveed Arshad (Lahore University of Management Sciences)	15:10-15:30	<b>ID:35 Investigation of the Effect of Variable Parameters on Comprehensive Maximum Error of Active Electricity Meters by Test Results</b> Murat Tasci (The Ministry of Industry and Technology); Hidir Duzkaya (Gazi University)*
15:30-15:50	<b>ID:82 solar Tracking System Utilizing Internet of Things Technologies for Enhanced Power Generation</b> Noah R Waldron (Spring Arbor University); Sebastian A Smith (Spring Arbor University); Victor U Karthik (Spring Arbor University)*	15:30-15:50	<b>ID:45 Ultra-Short-Term Forecasting of Wind Speed using Lightweight Features and Machine Learning Models</b> Rami A AL-HAJI (American University of the Middle East)*; Mohamad Fouad (Mansoura University); Ali ASSI (IEEE); Enad Mabrouk (American University of the Middle East)
15:50-16:10	<b>ID:83 A Numerical Model for the Transport of Reactants in Proton Exchange Fuel Cells</b> Gomer Abel Rubio (ESPOL)*; Wilton edixon Agila (ESPOL); Leandro González (CAR-UPM-CSIC); Jonathan Avilés (ESPOL)	15:50-16:10	<b>ID:193 Fixed-Time Sliding Mode Control for DC-DC Converters with both Matched and Mismatched Disturbances Based on Disturbance Observer</b> Ferhat Bodur (Gazi University); Orhan KAPLAN (Gazi University)*
16:10-16:30	<b>ID:85 Correction of Current Measurement Scaling and Offset Errors for Permanent Magnet Synchronous Machine Drives</b> Ying Zuo (Concordia University)*; Xizhe Zhang (Concordia University); Chunyan Lai (Concordia University); Lakshmi Varaha iyer (Magna International Inc.)	16:10-16:30	<b>ID:107 Optimum MPPT technique for reconfiguring the photovoltaic array under partial shading failure.</b> hicham ouettou (EMI)*; Saad Motahhir (USMBA); ibihal Alt Abdelmoula (Green Energy Park); Ghassane Aniba (Mohammadia School of Engineers (EM), Mohammed V University in Rabat); Walid issa (Sheffield Hallam University); Oumaima MAHR (Laboratory of Signals, Systems, and Components, FST Fez, University Sidi Mohamed Ben Abdellah)
16:30-16:50	<b>ID:53 A Proposal of Sinusoidal Voltage Source Fed Optimal Current Control for SPMVM with Active LC Filter by IRM-ILQ Control</b> Ayumu Okubo (Shibaura institute of Technology)*; kazuki Abe (Shibaura institute of Technology); Yoshiki Sasaki (Shibaura institute of Technology); Hiroshi Takami (Shibaura institute of Technology); Fuminori ishibashi (Shibaura institute of Technology)	16:30-16:50	<b>ID:198 Preliminary Studies on Dynamic Reduction of the Turkish Transmission Network</b> Merden YESIL (EPRA); Erdal Irmak (Gazi University)*
16:50-17:10	<b>ID:202 Coreless Axial Flux Halbach Array Permanent Magnet Generator Concept for Direct-Drive Wind Turbine</b> Matin Vatani (University of Kentucky); Ali Mohammadi (University of Kentucky); Donovin D Lewis (University of Kentucky)*; John F. Eastham (University of Bath); Dan M. Ionel (University of Kentucky)	16:50-17:10	<b>ID:165 Technical Feasibility of Offshore Wind Power Plant for Gokceada Region in Türkiye</b> Erdal Bekiroglu (Bolu Abant izzet Baysal University)*; Muhammed Duran Yazar (Bolu Abant izzet Baysal University); Burak Akyol (Bolu Abant izzet Baysal University)
<b>17:10-18:00</b>		<b>CLOSING CEREMONY</b>	

## Presentation Instruction for ICRERA 2023 Presenters

### Virtual & Oral presentation

Each paper in the session will be given a total of 20 minutes, including 15 minutes of presentation and 5 minutes of questions and discussion.