

**12th INTERNATIONAL CONFERENCE on SMART GRID
(icSmartGrid2024)**



Setubal, Portugal May 27-29, 2024
icSmartGrid2024
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TOPICS

The coverage of the Conference on Smart Grids includes the following areas, but not limited to:

- Successful applications of smart grid
- Integration of renewable energy sources to smart grid
- Production of energy using smart grid technologies >
- Hybrid smart grid energy system technologies
- Novel energy conversion studies in smart grid systems
- Control techniques for smart grid energy systems
- Performance analysis of smart grid energy systems under different loads
- Computational methods and artificial intelligence studies in smart grids
- Optimized power delivery and generation
- Self-healing
- Distributed power energy systems and sources, renewable energy, conventional power sources
- New trends and technologies for smart grid
- Policies and strategies for smart grid
- Microgrids for transportation electrification
- Energy transformation from renewable energy system to smart grid
- HVDC for smart grid
- Power devices and driving circuits for smart grid
- Decision support systems for smart grid
- ICT, IoT, real-time monitoring and control
- Applications for industries
- Smart grid for electrical vehicles and components
- Energy management systems, etc.
- Future challenges and directions for smart grids

LANGUAGE

The working language of the **icSmartGrid2024** conference is English.

WELCOME to icSmartGrid 2024

Dear Colleague,

The purpose of the International Conference on Smart Grid (**icSmartGrid2024**) is to bring together researchers, engineers, manufacturers, practitioners and customers from all over the world to share and discuss advances and developments in Smart Grid research and applications.

After the successes of the first and the second editions of Smart Grid Workshops on behalf of European Commission Joint Research Centre at Antalya in September 18-20, 2013 and in September 23-25 April, 2014, the third addition at Istanbul in February 22, 2015, the fourth addition at Istanbul in April 28, 2015, fifth addition at Istanbul in March 21-25, 2016 with the technical co-sponsorship of IEEE IES, the sixth addition at Nagasaki in December 4-6, 2018 with technical co-sponsorship of IEEE IES and IAS, the seventh addition at Newcastle, Australia in December 9-11, 2019, the eighth addition at Paris, France in 2020 with the technical co-sponsorship of IEEE IES and IAS, the ninth addition at Setubal, Portugal in 2021 with the technical co-sponsorship of IEEE IES and IAS, the tenth addition at Istanbul, Turkiye in 2022 with the technical co-sponsorship of IEEE IES and IAS, the eleventh addition at Paris, France in 2023 with the technical co-sponsorship of IEEE IES and IAS, we are now organizing the twelfth International Conference on Smart Grid at Setubal, Portugal, in 2024 with the technical co-sponsorship of IEEE IES and IAS. icSmartGrid will continue promoting and disseminating the knowledge concerning several topics and technologies related to smart energy systems and sources. It is therefore aimed at assisting researchers, scientists, manufacturers, companies, communities, agencies, associations and societies to keep abreast on new developments in their specialist fields and to unite in finding alternative energy solutions to current issues such as the greenhouse effect, sustainable and clean energy issues.

You will find the detail information about this activity on the conference official website. Please visit <http://www.icsmartgrid.org/>



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KEYNOTE SPEAKERS

Keynote 1: Makoto Yoshimura, Executive Officer, Deputy Vice President & Technology Executive Power Electronics System Division TMEIC, Japan

Date : May 27, 2024 09.00-10.00 AM



Makoto Yoshimura serves as the Executive Officer and Deputy Vice President & Technology Executive of Power Electronics System Division, a role he assumed in April 2024.

Yoshimura began his career with TMEIC Corporation in October of 2003, during the formation of the joint venture between Toshiba and Mitsubishi Electric. Yoshimura started in the Power Electronics System Division and was responsible for motor drive system design and development from 1989. And in October of 2017, Yoshimura was appointed the President and CEO of TMEIC Power Electronics Products Corporation in U.S.A. And in April of 2019, Yoshimura returned to TMEIC corporation in JAPAN and was appointed the Technology Executive of Industrial system Division and Renewable Energy &

New technology Division.

Yoshimura was born in Kure, Hiroshima Prefecture and graduated from Kyushu University with a BS in Electrical Engineering and a MS in Electrical Engineering. His current focus is to guide TMEIC Power Electronics business's further development and future growth.

Latest Power Electronics Technology to realize the carbon neutral society

Summary: The United Arab Emirates (UAE) hosted COP28 from the end of November 2023. There, the UAE, the US, the EU and other countries supported targets for preventing global warming, such as tripling global renewable power generation and doubling energy efficiency improvements by 2030. In addition to these, to realize the Carbon-Neutral Society, it is necessary to make transition to clean energy by promoting electrification and hydrogen application. This presentation intends to remind that Power Electronics technology is inevitable in every solution for achieving carbon neutrality.

TMEIC continues to develop power electronics technology with the concept of "PEiE: Power Electronics in Everything." This presentation introduces the latest Power Electronics technology to realize Carbon-Neutral Society by showing topics applied in large-scale industries.

The first topic is the high-capacity Power Electronics technology to increase Renewable Energy. In the future, the Renewable Energy will be the main player in the electrical power networks in place of fossil-fueled generators, where Power Electronics technology will provide the grid-forming functions to Renewable Energy. Power Electronics also contributes to power transmission from remote Renewable Energy generations.

The second topic relates to the Green Hydrogen. Some sectors driven by fossil fuels are found difficult to electrify. Such sectors require switching to clean fuels including Green Hydrogen. Massproduction of Green Hydrogen requires high-capacity Power Electronics technology friendly to the future power networks.

The third topic relates to digital networks for information and communication. The digital networks will dynamically manage the energy networks operation in the future. It should be recalled that the digital networks need the electric power. The Power Electronics technology provides such power supply solutions.

The final topics introduces the Power Electronics technologies applied to industries. For achieving Carbon Neutrality, the industries are also required to abate CO2 emission. The large-scale industries cannot apply conventional solutions with limited power range. There, the high-capacity Power Electronics technology provides solutions. It realizes electrification of facilities rated at tens of MW. The high-capacity Power Electronics also improves energy efficiency by optimally managing MWrated systems.

Keynote 2: Keiji Wada, Tokyo Metropolitan University, Japan

Date : May 27, 2024 10.10-11.10 AM



Keiji Wada (Senior Member, IEEE and IEEJ) received the Ph.D. degree in electrical engineering from Okayama University, Okayama, Japan, in 2000. From 2000 to 2006, he was an Assistant Professor with Tokyo Metropolitan University and the Tokyo Institute of Technology. He became an Associate Professor in 2006 and a Professor in 2021 with Tokyo Metropolitan University.

His research interests include gate-drive circuits, electromagnetic interference filters, and power converter circuits.

Solid-State Circuit Breakers for Low-Voltage DC Distribution Systems

Summary: Solid-state circuit breakers (SSCBs) are a promising solution for enhancing safety and reliability in lowvoltage DC distribution systems. However, their realization presents challenges, including the need for robust avalanche capability, device paralleling for low conduction losses, and reliable operation under repetitive interruption. This presentation will discuss recent research advancements in SSCB technology.

First, a novel SSCB design utilizing paralleled SiC MOSFETs with an integrated SiC MPS diode for avalanche voltage clamping will be introduced, along with experimental results demonstrating its improved performance and reliability. Furthermore, future research directions and the potential for wide adoption of SSCB technology in applications such as electric vehicles and DC microgrids will be explored, emphasizing the importance of module-level implementation and high-density packaging techniques.

Keynote 3: Adel Nasiri, University of South Carolina, USA

Date : May 28, 2024 09.00-10.00 AM



Adel Nasiri, Ph.D., Fellow IEEE, is an expert in high power electronic development, grid resiliency, renewable energy, and energy storage. He has over 25 years of experience in academia and industry. He is presently a Thomas Gregory Endowed Professor in the Electrical Engineering Department at the University of South Carolina. His research interests are high power converters, grid resiliency, energy storage, and microgrids. Previously, he worked at the University of Wisconsin-Milwaukee (UWM) from 2005 to 2021 and served in various roles including founding and Interim Executive Director, Connected Systems Institute (CSI) and Director, Center for Sustainable Electrical Energy, and the site director for the NSF center on Grid-connected Advanced Power Electronic Systems (GRAPES). He has published numerous technical journal and conference papers and co-authored two books and several book chapters on related topics. He also holds nine patent disclosures.

Dr. Nasiri is the past chair of IEEE Industry Applications Society (IAS) Committee on renewable and sustainable energy conversion. He is also an Editor of Power Components and Systems, and Associate Editor of the International Journal of Power Electronics and was an Editor of IEEE Transactions on Smart Grid (2013-2019) and paper review chair for IAS (2018-2019). He was the general Chair of 2012 IEEE Symposium on Sensorless Electric Drives, 2014 International Conference on Renewable Energy Research and Applications (ICRERA 2014), and 2014 IEEE Power Electronics and Machines for Wind and Water Applications (PEMWA 2014).

Integration of Electric Vehicle Chargers in Smart Grid: Challenges, Impacts, and Prospect

Summary: Electric Vehicle Supply Equipment (EVSE) are becoming streamlined are among the fastest growing load sectors in electric grid. According to moderate estimates, EVSEs will account for nearly 23% of all electrical demand in the US by 2050. Special attention and planning are required for facility upgrades, power and energy management, protection, and cyber security and resiliency to integrate EVSEs in smart grid. In this talk, an EVSE infrastructure and its hardware, software, and energy management elements are described. Impacts of EVSE deployment on electrical distribution system is also outlined. The development of a medium voltage EVSE to minimize grid facility upgrades and to reduce installation and commissioning time and cost are also discussed.

Keynote 4: Kamal Al-Haddad, École de technologie supérieure, Québec

Date : May 28, 2024 10.10-11.10 AM



KAMAL AL-HADDAD (Life Fellow, IEEE) received the B.Sc.A. and M.Sc.A. degrees from the University of Quebec à Trois-Rivières, Trois-Rivières, QC, Canada, in 1982 and 1984, respectively, and the Ph.D. degree from the Institute National Polytechnique, Toulouse, France, in 1988. Since June 1990, he has been a Professor with the Electrical Engineering Department, École de Technologie Supérieure, Montreal, QC, Canada, where he has been the Senior Canada Research Chair of Electric Energy Conversion and Power Electronics since 2002. He is a consultant and has

established a very solid link with many Canadian and international industries working in the field of power electronics, electric transportation, aeronautics, and telecommunications. He successfully transferred and implemented twenty-four technologies to Canadian and international companies. His research interests include highly efficient static power converters, harmonics and reactive power control using hybrid filters, voltage-level multiplier, resonant and multilevel converters including the modeling, control, and development of prototypes for various industrial applications in electric traction, renewable energy, sinewave power supplies for drives and telecommunication. Prof. Al-Haddad is a Member of the Academy of Sciences, Fellow of the Royal Society of Canada, and a Fellow Member of the Canadian Academy of Engineering. He was the IEEE IES President during 2016–2017. He is an Associate Editor for the IEEE TRANSACTIONS ON INDUSTRIAL INFORMATICS and IES Distinguished Lecturer. He was the recipient of the 2014 IEEE IES Dr.-Ing. Eugene Mittelmann Achievement Award. He is the IEEE 2023-2024 division VI director. Professor Al-Haddad is the recipient of the 2023 Medal in Power Engineering.

New Challenge in Power Electronics for Electric Energy Supply

Summary: The constant growth of electric energy demand is pushing to the critical operation limit of the existing electric grid. The presentation will focus on the new challenges to ensure a safe and reliable electric energy supply in the coming era of high electrification and high percentage of intermittent renewable energy supply injected into the grid. Environmentally friendly design of the power stages will be highlighted with the focus on the power electronics converters that are called to play a major role in adapting and controlling the flow of energy between different sources, energy storage components and the loads. Moreover, the quality of power as well as decoupling the growing number of microgrids in order to be controlled efficiently as to ensure stable and reliable energy supply.

Keynote 5: João Martins, Universidade NOVA de Lisboa, Portugal

Date : May 29, 2024 09.00-10.00 AM



João Martins received his MSc in 1996 and his PhD in 2003 from Instituto Superior Técnico (IST), Technical University of Lisbon, Portugal. Currently he is a Full Professor at NOVA School of Sciences and Technology, Universidade NOVA de Lisboa, Portugal. João Martins is senior researcher at UNINOVA-CTS, Portugal, where he coordinates the Energy Efficiency Group and integrates the Board of Directors. He is the co-author of more than 90 scientific articles in refereed journals and books and more than 180 articles in refereed conference proceedings. João Martins is an active member in various program committees of scientific conferences and serves as an associate editor of IEEE IES Industrial Electronics Magazine, Sustainable Cities and Society, IET Power Electronics and MDPI Energies. He was and is involved as member and/or project coordinator in several national and international research projects. In addition, he is an evaluator of research proposals and projects for several national and European funding agencies.

João Martins is a senior member of IEEE, member of CIGRE, effective member of Engineers Association (Portugal) and founding member of the Portuguese Society for Education in Engineering (SPEE). His research interests are mainly in energy efficiency, alternative energies and power quality, intelligent and energy efficient buildings, heritage buildings, energy awareness, smart grid renewables integration.

The contribution of Energy Flexibility for a more resilient and sustainable power grid

Summary: The world is experiencing the highest penetration of renewable energy but, at the same time, there is an increasing electrification of the energy demand along with a more frequent occurrence of extreme weather events. These changes pose new challenges in terms of electrical systems management and planning. On the end user side, the drastic variations in loads over the course of a day or the increased use of energy in the so-called peak periods poses more complex control problems requiring faster decision times and smaller error margins. On the other hand, the electrical power grid is a critical infrastructure, that underpins modern society, particularly vulnerable to extreme weather events. Disruptions due to extreme weather events can lead to power outages that can last for days or even weeks, affecting hospitals, communication networks, water and sanitation systems, and essential services. Energy flexibility is being regarded as a valuable tool towards a more sustainable electrical system. This tool combined with new paradigms, such as the establishment and operation of energy communities, will provide resilience, flexibility, interconnectivity, bi-directionality and complementarity with advantages either to consumers either to the electrical power grid itself. This talk will address the use of energy flexibility as a tool to achieve a more resilient and sustainable electrical system.

Keynote 6: Giovanni de Carne, Institute for Technical Physics at the Karlsruhe Institute of Technology, Karlsruhe, Germany

Date : May 29, 2024 10.10-11.10 AM



Giovanni De Carne received the B.Sc. and M.Sc. degrees in electrical engineering from the Polytechnic University of Bari, Italy, in 2011 and 2013, respectively, and the Ph.D. degree from the Chair of Power Electronics, Kiel University, Germany, in 2018.

He is currently W3 (Full) Professor at the Institute for Technical Physics at the Karlsruhe Institute of Technology, Karlsruhe, Germany, where he leads the "Real Time System Integration" Group and the "Power Hardware In the Loop Lab".

In 2020, Prof. De Carne has been awarded with the highly-competitive Helmholtz "Young Investigator Group" for the project "Hybrid Networks: a multi-modal design for the future energy system". He is involved in industrial projects with the major energy manufacturers, such as Siemens Mobility, Schneider Electric, ABB, Bosch, and he develops high-power infrastructure for transfer-to-industry purpose.

He actively contributes scientifically to the field with particular focus on power electronics integration in power systems, solid state transformers, real time modelling, and power hardware in the loop.

He successfully hosted the IEEE eGrid2023 Workshop in Karlsruhe in October 2023. He is an Editor of several IEEE and IET journals and (co-)leads task-forces in CIGRE and PES on the Solid State Transformer integration in distribution grids.

Power Hardware In the Loop: potential, challenges, solutions

Summary: To address the challenges of the green energy transformation, academia and industry are introducing at fast pace many novel energy solutions. This fast evolution, however, makes extremely challenging to properly address their impact on the energy systems when they are installed in the field. Classical approaches to develop prototypes and to perform weeks- or months-long field testing cannot cope with the pace of these innovations. There is a concrete risk that the field-testing represents the pacebottleneck for introducing new technologies in the market and thus to enable the green transition.

To accelerate the introduction to market of new energy technologies, the concept of Power Hardware In the Loop (PHIL) has been proposed in recent years. The PHIL is based on simulating an electrical circuit in a digital real time simulator that is connected to the hardware under test by means of a power interface. The PHIL allows to flexible change the testing environment varying the simulation parameters, while keeping high experimental validation fidelity.

This Keynote talk will provide an overview of the current state of the art of PHIL, what are its advantages and drawbacks, the potential applications, standardization efforts, and the missing research topics. A more technical focus will be given to novel mathematical approaches, based on impedance-based stability theory, to evaluate more accurately the stability of PHIL testing.

TUTORIALS

Speaker 1: Professor Seref Sagiroglu, Gazi University, Turkiye

Date : May 27, 2024 15.40-16.40



Prof. Dr. Seref Sagiroglu completed his undergraduate education in 1987 at Erciyes University, Department of Electronics Engineering, and his doctoral studies at the University of Wales College of Cardiff (now Cardiff University, UK) in 1994. He continues his academic career as a full professor of software engineering at Gazi University's Computer Engineering Department. Sagiroglu has an outstanding academic with more than 8000 citations; almost 400 articles published in SCI/SSCI indexed journals, national and international conferences, symposium and workshops, 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. Sagiroglu organized 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. 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); International Journal of Information Security Engineering (in Turkish) (www.dergipark.gov.tr/ubgmd) and CyberMag (www.cybermag.com); Member of Cyber Security Group of Higher Education Council of Turkey; contributed to consultants to Havelsan; IT Regulatory Body of Turkey and Personal Data Protection Regulatory Body of Turkey; 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. He is now the director of the AI and Big Data Center of Gazi University, Ankara, Turkey, and also is the president of the Chamber of Electrical Engineering Ankara Branch.

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

Summary: Big data and AI have great potential to provide opportunities not only in many fields but also energy-enhancing technical, organizational, social, and economic gains and contributions. The current potential of applying big data and AI approaches for better planning, managing, designing, and securing power grid systems and operations is challenging and needs significant efforts. This talk will cover data security and privacy, cost, management, planning, and integration of big data into energy and power grid systems, along with some key challenges.

Speaker 2: Professor Rosario Miceli, Palermo University, Italy

Date : May 27, 2024 16.40-17.40



Rosario Miceli received the B.S. degree in electrical engineering and the Ph.D. degree from the University of Palermo, Palermo, Italy, in 1982 and 1987, respectively. He is a Full Professor of electrical machines with the Polytechnic School, University of Palermo. He is a Personnel in Charge of the Sustainable Development and Energy Savings Laboratory of the Palermo Athenaeum. His main research interests include mathematical models of electrical machines, drive system control, and diagnostics, renewable energies, and energy management. Dr. Miceli is a Reviewer for the IEEE Transactions on Industrial Electronics and the IEEE Transactions on Industry Applications.

Battery modeling and characterization: challenges and perspectives

Summary: Energy Storage Systems (ESS) play a vital role in the transition towards a clean and reliable energy future. Their benefits let them cover multiple areas, from grid-connected application to the industry and the automotive field. In particular, batteries are the most widely used technology for storing electricity, representing the key point on which much investment has been and continues to be focused. As for the grid-connected applications, ESS and batteries can increase the renewable energy integration, storing excess energy generated during peak production times (sunny days, strong winds) and release it when demand is high or when renewable generation is low. They can improve grid stability and reduce reliance in peak power plant. As for the automotive sector, batteries serve for different purposes of which the main one is to store the energy needed by the electric powertrain. From the analysis of these two sectors, it is possible to realize how wide the energy storage market is. Nowadays, research is focused on different aspects of them, such as new materials, Life Cycle Assessment (LCA), safety, applications, and modelling. The latter is a very complex and evolving field, as well as one of crucial importance, since reliable models allows for performance simulation under different operating conditions, design efficient and safe systems, design control algorithms for energy management and optimize storage systems for specific applications. The choice of the most suitable battery model depends on several factors: the specific application, the level of accuracy required, the computational resources available. The challenges in the field of battery modelling are related to different factors such as complexity of battery systems, lack of data and nonlinearities.

Based on the purpose of modelling, different types of models are available in the literature: thermal models, behaviour models, ageing models. For them, different approaches can be employed. An electrochemical approach provides a very accurate analysis of the system through equations describing chemical processes occurring inside a cell; analytical models, on the other hand, are simpler to implement, however, they suffer from low accuracy and often the equations employed do not have a physical match. Equivalent circuit modelling has the merit of being a trade-off between the previous ones, however, experimental tests are often needed for cell characterization, whereas the ones employing finite element analysis (FEA) are very accurate but require very high computational effort. All these approaches and methodologies can be a valid solution to predict the state of charge (SOC), the state of health (SOH), the thermal and electrical behaviour of the cell, or more generally to study the battery behaviour from different points of view. The challenges for researchers are represented by balancing complexity and accuracy, describing multiscale phenomena and generalizing theory with respect to the wide literature.

Speaker 3: Professor Andres Annuk, Estonian University of Life Sciences, Tartu, Estonia

Date : May 28, 2024 15.40-16.40



Prof. PhD Andres Annuk received a master's in electrical engineering from the Estonian Agricultural Academy (now Estonian University of Life Sciences) in 1985. He completed his doctoral studies at the Institute of Agricultural Engineering and Electrification for Non-Chernozem Zone of RSFSR, LeningradPushkin (now Saint-Petersburg-Pushkin, Russia) in 1991 in the field of agricultural engineering. He continued his academic career as a lecturer in 1999 and as a professor in Energy Supply at Estonian University of Life Sciences in 2010.

Professor Andres Annuk is a Member of the Board of the World Energy Council Estonia (WEC), a Member of the Energy Engineering Commission of the Estonian Academy of Sciences and a Chartered Electrical Engineer, level 8. Andres Annuk successfully supervised 7 PhD and 44 master students, had 150 scientific articles from 65 in ISI Web database, and 4 industrial properties.

His research interests are wind and solar PV energetics, increasing self-consumption of renewables in a microgrid, peak shaving and shifting technologies, electricity storage issues and electricity arbitrage.

Electricity Arbitrage and Peak Shifting Technologies

Summary: This tutorial is designed to be highly practical and engaging, particularly for those who have prosumers and buy electricity from the market. In Scandinavia, electricity supply is based on the NordPool market. Around 2 pm, hour-by-hour electricity prices for the next day, 24 hours ahead, are available. These prices can fluctuate from minus prices up to 4000 €/ MWh. This price volatility, especially recently, has led to decreasing revenues from PV parks. The main reason for this is the increasing PV electricity in the balance of the Estonian network. On days of clear sky in the summertime, mainly on the weekends, only the PV electricity production exceeds the country's total consumption. Neighbour countries are also developing PV solar and wind energy simultaneously. To navigate these challenges, we explore using batteries for electricity arbitrage. When electricity prices are low, it is reasonable to buy, and in hours when the price is expensive to sell. PV panels in the composition of prosumers introduce new challenges to electricity arbitrage. We discuss different ways to set the price levels of charge/ discharge batteries. This tutorial is a practical guide, sharing our findings and insights.

Speaker 4: Professor Brayima Dakyo, Université du Havre, France

Date : May 28, 2024 16.40-17.40



Prof. Dr.Eng, PhD Brayima DAKYO (France) received the Dipl. Electrical Engineer and Doctor in Electrical Engineering degrees from Dakar University, Dakar, Senegal, in 1984 and 1987, respectively, and the PhD in Physics degree and French Academic Qualification Dipl. to lead Research (HDR) from the University of Le Havre, Le Havre, France, in 1988 and 1997, respectively. He is a Full Professor in electrical engineering, and have founded and headed 16 years long the Research Laboratory of electrical and automation engineering, University of Le Havre.

Professor Dakyo has published and co-authored more than 200 Peer reviewed papers in scientific journals and conference proceedings since 1987. He has supervised more than 20 Ph.D. Co-authored three books (power electronic, marine & wind energy, power management). His current research interests include power electronic, converter-fed electrical machines, electrically powered systems, wind and solar energy systems, and diagnostic.

Professor Dakyo is member of European Power Electronic and Applications Association (EPE), member of French Electrical Engineering Association (CLUB EEA), member of IEEE societies.

He's publication Topics are supercapacitors, energy management systems, DC-DC power convertors, power generation control, Hybrid diesel-electric generators with photovoltaic wind power plants, distributed power generation, hybrid electric vehicles, resonant power convertors, DC-AC power.convertors, PWM invertors, battery management systems, power control in hybrid power systems, photovoltaic power systems.

Also published under: B. Dakyo, Brayma Dakyo, Brahim Dakyo

Keys to understanding the challenges of wind energy conversion and energy storage

Summary: Wind energy is currently the leading renewable energy source (excluding large hydro) in the electricity generation mix in many countries. This tutorial aims to highlight the existing technical and economic challenges, including an increasingly detailed knowledge of the intermittency and efficiency of converting wind resources into available final electricity.

However, the expected development is linked to the storage capacity needed to manage the instabilities and uncertainties induced in the supply mix. In the new context of New Energy Technologies (NET), it is important to address the issue of distributed generation in terms of efficiency and real-time energy complementarity.

Microgrids, which can include wind power, are small-scale electricity networks designed to provide reliable, high quality electricity to a small number of consumers. Realising the potential of wind power would enable the production of nearly 100,000 TWh/year worldwide.

Offshore wind farms can be connected directly to the continental grid and cover different areas of the country under the supervision and authority of a grid operator, provided that the production of wind-generated electricity is synchronised with electricity demand on an hourly basis and that grid interconnection capacity and energy storage are strengthened. The tutorial will provide a comprehensive overview of these challenges.

Speaker 5-1: Innocent Ewean Davidson, Cape Peninsula University of Technology, South Africa

Date : May 29, 2024 15.00-16.00



Innocent Ewean Davidson, (Senior Member, IEEE) received the B.Sc. (Eng.) (Hons) and MSc (Eng.) degrees in Electrical Engineering from the University of Ilorin, in 1984 and 1987, respectively, Ph.D. degree in electrical engineering from the University of Cape Town, in 1998; and the PG Diploma degree in Business Management, from the University of KwaZulu-Natal, in 2004. He also received Associate Certificate in Sustainable Energy Management (SEMACE), from the British Columbia Institute of Technology, Burnaby, BC, Canada, in 2011, and the Course Certificate in Artificial Intelligence, from the University of California at Berkeley, USA in 2020. He is a Full Professor and Director, French South African Institute of Technology (F'SATI), and the African Space Innovation Center (ASIC), Cape Peninsula University of Technology (CPUT),

Bellville, South Africa. He has supervised six postdoctoral research fellows and graduated 63 Ph.D./Masters' students and over 1200 engineers, technologists, and technicians. He is the author/co-author of 405 technical papers in accredited journals, and peer-reviewed conference proceedings and book chapters. He has managed over US\$3 million in research funds. His current research interests include Space and CNS Innovation, smart grids, electromagnetics and applied artificial intelligence. He is a Fellow grade of the Institute of Engineering and Technology, UK, and the South African Institute of Electrical Engineers; a Chartered Engineer in the U.K.; and a registered Professional Engineer (P Eng.), of the Engineering Council of South Africa. He is a member: Western Canada Group of Chartered Engineers (WCGCE); the Institute of Engineering and Technology (IET Canada) British Columbia Chapter; IEEE Collaborate Communities on Smart Cities and IEEE (South Africa Chapter). He is a recipient of numerous international Best Paper Awards. He is a C2-rated researcher from the National Research Foundation (NRF), South Africa.

Design, Control Strategies, and Economic Viability of Inverter-Based Resources in a Microgrid

Summary: This tutorial explores inverter-based resources of microgrids, a promising technology for achieving resilient and sustainable energy systems. We will study the design considerations, control strategies, and economic feasibility of microgrids. The presented design features a battery energy storage system (BESS), a photovoltaic (PV) system, and a combined heat and power (CHP) unit. We explain gridconnected and islanded operation control strategies using droop control for efficient power sharing and voltage/frequency regulation. Protective measures like over/under voltage tripping, under-frequency load shedding, and islanding detection are also addressed. A detailed economic analysis is provided, demonstrating the project's financial viability through a positive net present value (NPV) and a low levelized cost of energy (LCOE). This tutorial serves as a valuable resource for researchers, engineers, and policymakers seeking to understand and implement microgrids as a path toward a sustainable energy future.

Speaker 5-2: Dr Elutunji Buraimoh, Clemson University, USA

Date : May 29, 2024 15.00-16.00



Dr Elutunji Buraimoh is a Researcher who focuses on developing communication latency prediction and compensation techniques in real-time power system co-simulation, i.e., simulation of a single complex system by more than one real-time digital simulator located in geographically separated laboratories integrated virtually via a high-speed computer network.

Elutunji conducted previous doctoral research as a D.Eng. (Doctor of Engineering) at the Smart Grid Laboratory, the Durban University of Technology, and the DEEPER Research Group, University of Valladolid, Spain, with a focus on developing novel strategies to make inverterbased renewable energy sources grid code compliant, smart, and grid-interactive. Recognized with research awards, including the Durban University of Technology D.Eng. Scholarship Award (Energy Research Focus Area) 2018–2020 and the Best Paper Award (third place) at the Clemson University Power Systems Conference 2020. Received a European Union Scholarship for International Exchange at the University of Valladolid, Spain, under the Erasmus+ KA107 Project. Also, awarded citation recognition at the 2020 Durban University of Technology Research and Innovation Award. Elutunji Buraimoh holds a B.Tech. (Hons.) degree in electronic and electrical engineering from Ladoke Akintola University of Technology, Nigeria, and an M.Sc. degree in electronic and electrical engineering from Obafemi Awolowo University, Nigeria. Elutunji served as a Guest Editor, Modern Electric Power Delivery Systems, Energies Special Issue and Editor/Publication Chair, 30th South African Universities Power Engineering Conference/Proceedings.

Design, Control Strategies, and Economic Viability of Inverter-Based Resources in a Microgrid

Summary: This tutorial explores inverter-based resources of microgrids, a promising technology for achieving resilient and sustainable energy systems. We will study the design considerations, control strategies, and economic feasibility of microgrids. The presented design features a battery energy storage system (BESS), a photovoltaic (PV) system, and a combined heat and power (CHP) unit. We explain gridconnected and islanded operation control strategies using droop control for efficient power sharing and voltage/frequency regulation. Protective measures like over/under voltage tripping, under-frequency load shedding, and islanding detection are also addressed. A detailed economic analysis is provided, demonstrating the project's financial viability through a positive net present value (NPV) and a low levelized cost of energy (LCOE). This tutorial serves as a valuable resource for researchers, engineers, and policymakers seeking to understand and implement microgrids as a path toward a sustainable energy future.

CONFERENCE PROGRAM SUMMARY

Program Summary of icSmartGrid 2024, Setúbal, Portugal May 27-29, 2024

| MAY 27, 2024 (MONDAY) | | MAY 28, 2024 (TUESDAY) | | | | | MAY 29, 2024 (WEDNESDAY) | | | | | | | | | | |
|---------------------------------------|--|---|---|---|---|-------------|--|---|---|---|--|-------------|--|---|---|---|--|
| 08.30-09.00 | Opening Ceremony and Speeches | | | | | | | | | | | | | | | | |
| 09.00-10.00 | Keynote Speech-I (60 Min) | | | | | 09.00-10.00 | Keynote Speech-III (60 Min) | | | | | 09.00-10.00 | Keynote Speech-V (60 Min) | | | | |
| 10.00-10.10 | COFFEE BREAK | | | | | 10.00-10.10 | COFFEE BREAK | | | | | 10.00-10.10 | COFFEE BREAK | | | | |
| 10.10-11.10 | Keynote Speech-II (60 Min) | | | | | 10.10-11.10 | Keynote Speech-IV (60 Min) | | | | | 10.10-11.10 | Keynote Speech-VI (60 Min) | | | | |
| 11.10-11.20 | COFFEE BREAK | | | | | 11.10-11.20 | COFFEE BREAK | | | | | 11.10-11.20 | COFFEE BREAK | | | | |
| MAY 27, 2024 (MONDAY) | | MAY 28, 2024 (TUESDAY) | | | | | MAY 29, 2024 (WEDNESDAY) | | | | | | | | | | |
| 11.20-12.40 | Session-1 4 PAPERS (4*20=80 Min) | Session-2 (ONLINE) 4 PAPERS (4*20=80 Min) | Session-3 (ONLINE) 4 PAPERS (4*20=80 Min) | Session-4 (ONLINE) 4 PAPERS (4*20=80 Min) | Session-5 (ONLINE) 4 PAPERS (4*20=80 Min) | 11.20-13.00 | Session-11 5 PAPERS (5*20=100 Min) | Session-12 (ONLINE) 5 PAPERS (5*20=100 Min) | Session-13 (ONLINE) 5 PAPERS (5*20=100 Min) | Session-14 (ONLINE) 5 PAPERS (5*20=100 Min) | Session-15 (ONLINE) 4 PAPERS (4*20=80 Min) | 11.20-13.00 | Session-21 5 PAPERS (5*20=100 Min) | Session-22 (ONLINE) 5 PAPERS (5*20=100 Min) | Session-23 (ONLINE) 5 PAPERS (5*20=100 Min) | Session-24 (ONLINE) 5 PAPERS (5*20=100 Min) | |
| 12.40-13.30 | LUNCH | | | | | 12:40-13:30 | LUNCH | | | | | 12:40-13:30 | LUNCH | | | | |

Program Summary of icSmartGrid 2024, Setúbal, Portugal May 27-29, 2024

| | MAY 27, 2024 (MONDAY) | | | | | MAY 28, 2024 (TUESDAY) | | | | | MAY 29, 2024 (WEDNESDAY) | | | | | |
|-------------|---|---|---|---|--|------------------------|--|--|--|--|--|-------------|---|---|---|---|
| 13.30-15.30 | Session-6 6 PAPERS (6*20=120 Min) | Session-7 (ONLINE) 6 PAPERS (6*20=120 Min) | Session-8 (ONLINE) 6 PAPERS (6*20=120 Min) | Session-9 (ONLINE) 6 PAPERS (6*20=120 Min) | Session-10 (ONLINE) 6 PAPERS (6*20=120 Min) | 13.30-15.30 | Session-16 6 PAPERS (6*20=120 Min) | Session-17 (ONLINE) 6 PAPERS (6*20=120 Min) | Session-18 (ONLINE) 6 PAPERS (6*20=120 Min) | Session-19 (ONLINE) 5 PAPERS (5*20=100 Min) | Session-20 (ONLINE) 5 PAPERS (5*20=100 Min) | 13.30-14.50 | Session-25 4 PAPERS (4*20=80 Min) | Session-26 (ONLINE) 4 PAPERS (4*20=80 Min) | Session-27 (ONLINE) 4 PAPERS (4*20=80 Min) | Session-28 (ONLINE) 4 PAPERS (4*20=80 Min) |
| 15.30-15.40 | COFFEE BREAK | | | | | 15.30-15.40 | COFFEE BREAK | | | | | 14.50-15.00 | COFFEE BREAK | | | |
| 15.40-16.40 | TUTORIAL-I | | | | | 15.40-16.40 | TUTORIAL-III | | | | | 15.00-16.00 | TUTORIAL-V | | | |
| 16.40-17.40 | TUTORIAL-II | | | | | 16.40-17.40 | TUTORIAL-IV | | | | | 16.00 | Closing Ceremony | | | |
| 18.00 | Welcome Party | | | | | 18.00 | Gala Dinner | | | | | | | | | |

CONFERENCE PROGRAM

| Date: 27 MAY 2024 | |
|-------------------|--|
| KEYNOTE | |
| 08.30-09.00 | <p>Opening Ceremony and Speeches:</p> <ul style="list-style-type: none">-Mr. Hidehiko Kikuchi, Chief Executive Officer, Power Systems Corporation, Japan-Prof. Ângela Lemos, President of the Polytechnic Institute of Setúbal-Prof. Vitor Pires, General Chair, icSmartGrid 2024-Prof. Fujio Kurokawa, General Co-Chair, icSmartGrid 2024-Prof. İlhami Colak, General Co-Chair, icSmartGrid 2024 <p>Chairs: Professor Rosario MICELI, Professor Nobumasa MATSUI, Professor Seref SAGIROGLU</p> |
| KEYNOTE | |
| 09.00-10.00 | <p>Speaker: Mr. Makoto Yoshimura, Deputy Vice President & Technology Executive Power Electronics System Division TMEIC Corporation</p> <p>Chairs: Professor Fujio KUROKAWA, Professor Fabio VIOLA</p> |
| 10.00-10.10 | COFFEE BREAK |
| KEYNOTE | |
| 10.10-11.10 | <p>Speaker: Professor Keiji Wada Tokyo Metropolitan University</p> <p>Chairs: Professor Nobumasa MATSUI, Professor Ramazan BAYINDIR</p> |
| 11.10-11.20 | COFFEE BREAK |

Date: 27 MAY 2024

| ORAL PRESENTATIONS | | ONLINE PRESENTATIONS | | ONLINE PRESENTATIONS | | ONLINE PRESENTATIONS | |
|--------------------|--|--|---|---|---|----------------------|-------------------------------------|
| SESSION 1 | CHAIRS: Mariacristina Roscia, Yudai Furukawa | SESSION 2 | CHAIRS: Xiaolu Li, Polamarasetty P Kumar | SESSION 3 | CHAIRS: Korhan Kayisli, Abdelkader Harrouz | SESSION 4 | CHAIRS: Javad Khazaei, Orhan Kaplan |
| SESSION 5 | CHAIRS: Ameni Boumaiza, Md Mehedi Hassain | | | | | | |
| 11.20-11.40 | ID:141 Black Widow Optimization of Dead Times in Asymmetrical 5-level Cascaded H-bridge Inverters Fabio Viola (università Di Palermo); Rosario Miceli (university Of Palermo); Ilihami Colak (Istinye University)* | ID:146 Predictive Maintenance Method Using Machine Learning; Comparing Classifiers Ramakrishna Nuvvula S S (Nitte Nmamit)* | ID:197 Ayvalik Coast Offshore Wind Turbine Potential and Economic Evaluation Orhun Celli Ozen (marmara University); Onur Akar (marmara University)* | ID:183 Analysis of Damping and Synchronizing Torques and Transient Stability of Power System with PV Power Station Operating in Different Control Modes Fawzi Aljowder (retired)* | ID:1 A Platform for Smart Homes in A Microgrid to Trade Energy Utilizing Blockchain Technology Ameni Boumaiza (qeen)*; Antonio Sanfilippo (qeen) | | |
| 11.40-12.00 | ID:143 Consumer Empowerment: A Customized Approach to Local Energy Markets Andrés Ondó Oná Ayécaba (universidad Politécnica De Valencia)* | ID:65 Optimal Sizing and Placement of Renewable Energy Systems in Smart Grids Using Machine Learning Optimization Polamarasetty P Kumar (Gmr Institute of Technology)* | ID:182 Home Energy Management with Lighting Control Strategies Considering Electricity Tariff Kubra Nur Akpınar (marmara Universitesi)*; Zuhail Polat (marmara Universitesi) | ID:199 Comparison of Data Partitioning Method Using Lstm for Power Demand At A Clinic Tomoya Inagata (nagasaki Institute Of Applied Science)*; Yuji Mizuno (osaka Electro-communication University); Jiyoung Choi (nagasaki Institute Of Applied Science); Fujio Kurokawa (nagasaki Institute Of Applied Science); Nobumasa Matsui (nagasaki Institute Of Applied Science) | ID:2 Towards A Blockchain-enabled Transactive Renewable Energy Trading Market Ameni Boumaiza (qeen)*; Antonio Sanfilippo (qeen) | | |
| 12.00-12.20 | ID:5 Optimal Sizing of A Hydrogen Backup Grid to Support Renewable Generation in Microgrids David C Toquica (uqtr)*; Kodjo Agbossou (nil); Nilson Henao (uqtr) | ID:66 Grid Stability Enhancement Through Machine Learning-driven Control Strategies in Renewable Energy Integration Polamarasetty P Kumar (Gmr Institute of Technology)* | ID:184 Fuzzy Based Vector Control Strategy for A Doubly Fed Induction Motor Lamia Youb (university Of Batna 2)* | ID:116 Energy Management of Wind Energy Hybrid Storage for Remote Area Power System Mohammed Abdouh Alsharhi (university Of Medea)*; Ouahid Bouchida (university Of Medea); Youcef Soufi (university Larbi Tébessi, Tébessa, Algeria); Cheriff Abderrezak (paris-saclay University) | ID:8 Experimental Results with The Use of Openai with Iot Clases for Water Analysis in Rainfall Antonio Carlos Biento (Instituto Tecnológico Y De Estudios Superiores De Monterrey)*; Carolina De Los Santos-resendiz (Instituto Tecnológico Y De Estudios Superiores De Monterrey); Lorena Estefany Segura-prado (Instituto Tecnológico Y De Estudios Superiores De Monterrey); Rodrigo Graza De La Rosa (Instituto Tecnológico Y De Estudios Superiores De Monterrey); Ruben De Jesus Hilario-cruz (Instituto Tecnológico Y De Estudios Superiores De Monterrey); Samuel González-vázquez (Instituto Tecnológico Y De Estudios Superiores De Monterrey) | | |
| 12.20-12.40 | ID:140 High Voltage Gain DC-DC Converter Designed to Extract Maximum Power From Photovoltaic Systems for Heat-pump Applications Claude Bertin Nzoundja Fapi (université Le Havre Normandie)*; Mohamed Lamine Toure (université Le Havre Normandie); Mamadou B Camara (university Le Havre); Brayima Dakyo (universit Le Havre) | ID: 228 Modeling of Aircraft Electrical System with Lithium-Ion Battery in Emergency Phase and Static Electrical Load Analysis Berkey Ersoy (Gazi University); Orhan KAPLAN (Gazi University)* | ID:193 Robust Super-twisting Sliding Mode Control with Dtc for Wecs Based Pmsg Elbar Chaima Yasmine (university Biskra)*; Belkacem Sebti (univ Batna 2); Ilihami Colak (Istinye University); Abedhakim Dendouga (university Biskra) | ID:187 Evaluating the Performance of Standalone Solar PV Systems Under Variable Conditions: MPPT and FPPT Algorithms Approach Amine Mohamed HARTANI (University Ahmed DRAIA - Adrar - Algeria); University Mohamed TAHIRI - Bechar - Algeria)*; Abdallah Laidi (University Ahmed DRAIA - Adrar - Algeria); FADILA TAHIRI (Laboratory LDDI, university ADRAR); Ilihami Colak (Istinye University) | ID:60 Machine Learning-driven Predictive Maintenance Framework for Anomaly Detection and Prognostics in Wind Farm Operations Ramakrishna Nuvvula S S (nitte Nmamit)* | | |
| 12.40-13.30 | LUNCH | | | | | | |

Date: 27 MAY 2024

| ORAL PRESENTATIONS | | ONLINE PRESENTATIONS | | ONLINE PRESENTATIONS | | ONLINE PRESENTATIONS | |
|--------------------|---|--|--|--|---|----------------------|--|
| SESSION 6 | CHAIRS: João Martins, Fabio Viola | SESSION 7 | CHAIRS: Ramakrishna Nuvvula, Orhan Kaplan | SESSION 8 | CHAIRS: Onur Akar, Lamia Youb | SESSION 9 | CHAIRS: Fawzi Aljowder, Mohammed Abdulelah Albasheri |
| SESSION 10 | CHAIRS: Mohanrajan S Rajendran, Ramakrishna Nuvvula | | | | | | |
| 13.30-13.50 | ID:45 Bearing Fault Detectability in Squirrel Cage Induction Generator At Different Load Levels Via Vibration Envelope Analysis Emanuele Fedele (University Of Naples Federico II)*, Luigi Pio Di Nola (University Of Naples Federico II) | ID:156 Two-stage Distributionally Robust Optimal Scheduling of Distribution Network Taking Into Account Demand-side Flexibility Resources Wei Li (neari Technology Co., Ltd.)* | ID:14 Differential Adaptive Protection Proposal to Interconnect Isolated Microgrid to The Primary Electric Grid: A Case Study In The Pedernales Province Armando Taveras-cruz (Universidad De Jaén); Armando J Taveras-cruz (Instituto Tecnológico De Santo Domingo)*; David Gonzalez (Instituto Tecnológico De Santo Domingo); Ivan Jhonson Mateo (Instituto Tecnológico De Santo Domingo); Javier Aquino Espinal (Instituto Tecnológico De Santo Domingo); Elin Jiménes-matos (Instituto Tecnológico De Santo Domingo); Miguel Aybar-meja (Instituto Tecnológico De Santo Domingo); Deylen Mariano-hernández (Instituto Tecnológico De Santo Domingo); Fabio Andrade (University Of Puerto Rico); Carlos R. Baier (University Of Talca); Jesus C. Hernandez (University Of Jaén) | ID:200 Determining The Optimal Parameters of A Hybrid Microgrid for Supplying The University of Kirkuk in Iraq Hind Muthanna Falih (karabuk University)*, Huseyin Demirel (ankara Yildirim Beyazıt University); Hussein Al-bayaty (Kirkuk University) | ID:25 Effective Planning and Analysis of Solar Panels in The Wind Farm Mohanrajan S Rajendran (amrita School Of Engineering Coimbatore, Amrita Vishwa Vidyapeetham,)*; Kavitha D (amrita School Of Engineering,amrita Vishwa Vidyapeetham, Coimbatore) | | |
| 13.50-14.10 | ID:119 Cooperative Control Assuming Power Interchange for Green Base Stations Masaki Nakamura (ntt Docomo, Inc.)* | ID:161 Voltage Control Strategy for Distribution Network Based on Incremental Learning and Knowledge Fusion Xiaolu Li (Shanghai University Of Electric Power)* | ID:19 Delay-dependent Stability Analysis of Micro-grid with Electric Vehicles Aggregator Using Direct Method Salman Aziz Dakhil (gazi University); Muhanned Al-shalah (gazi University); Saffet Ayassun (gazi University); Korhan Kayisli (gazi University)* | ID:201 Power Quality Investigation of A Grid-connected Single-phase Bidirectional AC/DC for Electric Vehicle Applications Seçil Yılmaz (ondokuz Mayıs University)*; Cenk Gezeğin (ondokuz Mayıs University); Okan Düzonenel (ondokuz Mayıs University); Kubra Nur Akpinar (marmara Universities); Burcu Gundogdu (hakkari University); Nur Sarma (durham University) | ID:26 Design and Implementation of A Hybrid Ac-dc Micro Grid for Voltage and Frequency Stabilization by Using Advanced Controltechniques Hemakesavulu Oruganti (aits, rajampet)*; Padma Lalitha M (padmalalitha_mareddy@Yahoo.co.in); Bayareddy Lomada (annamacharya Institute Of Technology And Science), Sannala Harshitha (annamacharya Institute Of Technology And Sciences Rajampet) | | |
| 14.10-14.30 | ID: 16 Realtime Middleware-based Distributed Micro-Smart Electricity Meters Basem Almadani (King Fahd University of Petroleum and Minerals); Abdullahi Sani Shuaibu (King Fahd University of Petroleum and Minerals); Sami Ul Haq (King Fahd University of Petroleum and Minerals); Farouq Muhammad Aliyu (King) | ID:68 Quantum Machine Learning for Advanced Optimization of Energy Storage Systems in Renewable Energy Microgrid Polamarasetty P Kumar (Gmr Institute of Technology)* | ID:207 A Comparison Study of 31-level Inverter Using Spwm and Shepwm Control Techniques Ahmed Yuseen Hamad (karabuk University)*; Rakan Khalil Antar (northern Technical University); Esagun Kursat Yaylacı (karabuk University) | ID:166 Harnessing Adaptive Sparsity: Data-driven Control for Solar PV Generation Zhongtian Zhang (lehigh University); Javad Khazaei (lehigh University)*; Rick Blum (lehigh University) | ID:27 AI Based Current Controller for Permanent Magnet Synchronous Motor Janani Sunil (amrita Vishwa Vidyapeetham)*; Mohanrajan S Rajendran (amrita School Of Engineering Coimbatore, Amrita Vishwa Vidyapeetham,) | | |
| 14.30-14.50 | ID:186 AI-enhanced Velocity Prediction for Efficient Ev Energy Management with Hybrid Storage Akash Kadechkar (Nvision)*; Xavier Llaurado (Nvision) | ID:69 AI-driven Energy Forecasting for Electric Vehicle Charging Stations Powered by Solar and Wind Energy Polamarasetty P Kumar (Gmr Institute of Technology)* | ID:41 Data-centric Modeling of Inverter-based Resources Using Systems Behavioral Theories Javad Khazaei (lehigh University)* | ID:170 High Gain Voltage Sepic Converter for PV System Abdelhakim Belkaid (bejaia University)*; Slimane Hadji (bejaia University); Lylia Larbi (université De Bejaia); Ilhami Colak (Istinye University); Korhan Kayisli (gazi University); Said Aïssou (bejaia University) | ID:32 An Improved Particle Swarm Optimization for Vehicle-to-grid Assessment of Charging Stations Chia-cheng Chang (national Taiwan University)*; Chih-wen Liu (national Taiwan University) | | |
| 14.50-15.10 | ID:172 Fmea 2.0: Machine Learning Applications in Smart Microgrid Risk Assessment Akash Kadechkar (nvision)*; Hakob Gngoryan (nvision) | ID:70 Grid-interactive Electric Vehicles: Intelligent Scheduling and Energy Trading in A Renewable Energy-powered Ecosystem Polamarasetty P Kumar (Gmr Institute of Technology)* | ID:61 Distributed Reinforcement Learning Framework for Autonomous Optimization of Grid-scale Energy Storage Systems in Renewable Energy Integration Ramakrishna Nuvvula S S (nitte Nnamit)* | ID:206 Comparative Study of Different Deep Learning Approaches for State of Charge Estimation in Lithium Iron Phosphate Battery Korhan Kayisli (gazi University)*; Nour El Houda Korbaa (University Of Science And Technology Of Oran Mb); Nadir Bouchetata (University Of Science And Technology Of Oran-mohamed Boudiaf); Ahmed Wahid Belarbi (University Of Science And Technology Of Oran-mohamed Boudiaf); Orhan Kaplan (gazi University) | ID:33 Design and Implementation of Hybrid Power Generation System for Sustainable Metro Cities Md Meheddi Hassan (International Islamic University Chittagong)*; Md.arafatur Rahman Ayan (International Islamic University Chittagong); Humaira Delower (International Islamic University Chittagong); Emon Barua (International Islamic University Chittagong); Kazi Mohammed Abdullah (International Islamic University Chittagong) | | |
| 15.10-15.30 | ID:29 Smart Modular Approach Models to Improve The Rating of Energy Performance Certificate of Residential Buildings Mariscristina Roscia (*University Of Bergamo, Italy)*; Giuliana Foti (universita Degli Studi Di Bergamo); Catalina A Lazroul (University Politehnica Of Bucharest) | ID:71 Energy-aware Vehicle-to-grid (v2g) Scheduling with Reinforcement Learning for Renewable Energy Integration Polamarasetty P Kumar (Gmr Institute of Technology)* | ID:37 Supervised Artificial Neural Networks by Field-oriented Control Applied to Pmsg-based Variable-speed Wind Turbine Mohammed Aouim (University Adrar)*; Abdellader Harrouz (University Adrar); Ibrahim Yalchi (laboratoire De Developpement Durable Et D Informatique (Ldd), University Ahmed Draia Adrar, Algeria); Ilhami Colak (Istinye University); Korhan Kayisli (gazi University); Virgil Dumbrava (University Politehnica Bucharest) | ID:118 Power Quality Improvement Using Nine-level Cascaded H-bridge Voltage Source Inverter for PV Applications Mohsin Jamil (memorial University Of Newfoundland)*; Muhammad Waqas (memorial University Of Newfoundland) | ID:154 Data-driven Dynamic State Estimation of Synchronous Generators Via Sparsity Promoting Unscented Kalman Filtering Elham Jamalnia (lehigh University); Javad Khazaei (lehigh University)*; Rick Blum (lehigh University) | | |
| 15.30-15.40 | COFFEE BREAK | | | | | | |

Date: 27 MAY 2024

TUTORIAL

15.40-16.40

Speaker:
Professor Seref Sagiroglu
Gazi University, Ankara, Türkiye
Chairs: Andres Annuk, Saadin Oyucu

TUTORIAL

16.40-17.40

Speaker:
Professor Rosario MICHELI,
Palermo University, Italy
Chairs: Brayima Dakyo Saadin Oyucu

18.00

Welcome Party

Date: 28 MAY 2024

KEYNOTE

09.00-10.00

Speaker:
Professor Adel Nasiri
University of South Carolina, USA

Chairs: Professor Armando PIRES, Professor Erdal BEKIROGLU

10.00-10.10

COFFEE BREAK

KEYNOTE

10.10-11.10

Speaker:
Professor Kamal Al-Haddad
IEEE Industry Applications Society

Chairs: Professor Rosario MICELI, Professor João MARTINS

11.10-11.20

COFFEE BREAK

Date: 28 MAY 2024

| ORAL PRESENTATIONS | | ONLINE PRESENTATIONS | | ONLINE PRESENTATIONS | | ONLINE PRESENTATIONS | |
|--------------------|---|--|---|---|---|----------------------|---|
| SESSION 11 | CHAIRS: Massimo Caruso, Oguzhan Ozcelik | SESSION 12 | CHAIRS: Shadab Murshid, Shivam R Chauhan | SESSION 13 | CHAIRS: Mohsin Jamil, Mehmet Demirtas | SESSION 14 | CHAIRS: Erdal Irmak, Abdelhakim Belkaid |
| SESSION 15 | CHAIRS: Nihat Ozturk, Ahmet Kilic | | | | | | |
| 11.20-11.40 | ID:12 High-voltage Outdoor Insulators' Performance Analysis: Bridging Real-world and Simulation Studies for Machine Learning Model Training Arslan Serikbay (Nazarbayev University)*; Sadjad Shafiq (Nazarbayev University); Venera Nurmanova (Electrical And Computer Engineering Department, Nazarbayev University); Mehdi Bagheri (Electrical And Computer Engineering Department, Nazarbayev University) | ID:111 Machine Learning-based Optimization Techniques for Renewable Energy Systems Palamarasetty P Kumar (Gmr Institute of Technology)* | ID:139 An Investigation Into The Efficacy of Machine Learning Models for Long-term Forecasting Fath Issi (Cankiri Karatekin University)* | ID:124 Designing A System of Step-by-step Quality Control Alena Rozhkova (Krasnoyarsk State Agrarian University); Vladislav V Kukartsev (Siberian Federal University); Anna Glinitscaya (Reshetnev Siberian State University Of Science And Technology)*; Ivan Pinchuk (Siberian Federal University) | ID:52 Smart Grid Customer Engagement: Impactful Marketing Initiatives in The Modern Energy Landscape Hatice Nurgul Durmus Senyapar (Gazi University); Ilhami Colak (Istinye University); Ramazan Bayindir (Gazi University)* | | |
| 11.40-12.00 | ID:38 A Hybrid Approach Based on Lmp and Vcg Mechanism to Create A Positive Interaction Between Distribution Companies and Owners of Dg Units Seyed Amir Mohammad Lahaghi (Shiraz University); Behrooz Zaker (Shiraz University); Gevorg B. Sharepetyan (Amirkabir University Of Technology (aut)); Venera Nurmanova (Electrical And Computer Engineering Department, Nazarbayev University)*; Mehdi Bagheri (Electrical And Computer Engineering Department, Nazarbayev University) | ID:225 Mppt Control of Four-switch Buck-boost Converter: A Model Predictive Approach Sedef Degirmenci (Gazi University)*; Nihat Ozturk (Gazi University) | ID:54 Performance Analysis of Machine Learning Algorithms on Power Quality Disturbances Classification Birsan Gumus (Gazi University)*; Melih Coban (Bolu Abant Izzet Baysal University); Suleyman S Tezcan (Gazi University) | ID:129 Creation of Multi-link Automatic Parameter Control Systems At Nuclear Power Plants Kirill Kravtsov (Department Of Information Economic Systems Reshetnev Siberian State University Of Science And Technology Krasnoyarsk, Russia)* | ID:137 AI-driven Smart Homes and Smart Grids: Marketing Strategies for Seamless Integration and Consumer Adoption Hatice Nurgul Durmus Senyapar (Gazi University); Ilhami Colak (Istinye University); Ramazan Bayindir (Gazi University)* | | |
| 12.00-12.20 | ID:134 Enhancing Low-inertia Power Systems with Grid Forming Based Hybrid Energy Storage Technology Elyas Rakhshani (hesstec)* | ID:224 Data-centric Theories and Singular Value Decomposition (svd) for Identification of Inverter-based Resources Shunje Zhang (Lehigh University); Javad Khazaei (Lehigh University)* | ID:162 Performance Evaluation of A Small Scale Microgrid Based on Centralized Multilevel Inverters Nisreen Obaid Nile (Uok); Ali Jafer Mahdi (Al-zahraa University For Women)*; Manal Hussein Nawir (Kerbala University); Bashar Abbas Fadheel (Upm) | ID:132 Modeling of The Casting Process for Casting "flywheel" of Cast Iron Sch20 Kirill Kravtsov (Department Of Information Economic Systems Reshetnev Siberian State University Of Science And Technology Krasnoyarsk, Russia)* | ID:34 Smart, Secure and Interoperable Charging Infrastructure with Plug and Charge Ahmet Kilic (Nisantasi University)* | | |
| 12.20-12.40 | ID:135 Synergistic Multi-service Operation of Hybrid Energy Storage Systems Elyas Rakhshani (hesstec)* | ID:222 Improving The Performance of A Non-uniform Field System Under AC Voltage Abdelhakim Belkaid (Bejaia University)*; Talit Belhou (University A. Mira of Bejaia); Chafaa Serf (University of Bejaia); Ilhami Colak (Istinye University); Zahra Mokrani (University of Bejaia) | ID:168 Robust Active and Reactive Power Control by Using Single-phase Grid Connected H-bridge Inverter Resul Coteil (Firat University); Korhan Kayisli (Gazi University)*; Ruhi Zafer Caglayan (Ted University) | ID:30 Literature Review Based Control Strategies of Electrolyzers Systems Toure Ibrahim (GreaH-laboratory, University Of Le Havre Normandie, France)*; Mamadou B Camara (University Le Havre); Brayima Dakyo (Universit Le Havre) | ID:35 Results with The Use of Artificial Intelligence with Openai Applied to Internet of Things Classes Antonio Carlos Bento (Instituto Tecnológico Y De Estudios Superiores De Monterrey)*; Sérgio Camacho-león (Instituto Tecnológico Y De Estudios Superiores De Monterrey); Elsa Yolanda Torres-torres (Instituto Tecnológico Y De Estudios Superiores De Monterrey) | | |
| 12.40-13.00 | ID:18 An Overview of Optimization Challenges in Electric Mobility Charging Stations and Driver Behavior in Congested Cities Juliana Bermúdez Guzmán (Universidad del Rosario); Juan Esteban Gonzalez Soto (Universidad del Rosario); DAVID CELEITA (Universidad del Rosario) | ID:232 Identify Vulnerable Lines on Static and Dynamic Load Configurations for GPS-Based PMU Interfaced Power Networks RAJU CHINTAKINDI (Vaagdevi College of Engineering-Warangal)* | ID:233 Bio-Inspired Technique Based on Hybrid SSA-SMA Method to Enhance the Output Power by Reconfiguration of PV Array Noor Abd Kadhim (Middle Technical University Electrical Engineering Technical College)*; Adel Obed (EETC-MTU); Dr. Ahmed J. Abid (Middle Technical University) | ID: 15 Integration of Photovoltaic Energy via an Automatic Phase Switch to a SCADA System David A. Alexander Castillo (Universidad Católica de Cuenca)* | | | |
| 12.40-13.30 | LUNCH | | | | | | |

Date: 28 MAY 2024

| ORAL PRESENTATIONS | | ONLINE PRESENTATIONS | | ONLINE PRESENTATIONS | | ONLINE PRESENTATIONS | |
|--------------------|--|--|---|---|---|----------------------|---|
| SESSION 16 | CHAIRS: Mehdi Bagheri, Elyas Rakhshani | SESSION 17 | CHAIRS: Nihat Ozturk, Mehmet Yesilbudak | SESSION 18 | CHAIRS: Suleyman S Tezcan, Fatih Issi | SESSION 19 | CHAIRS: Mamadou B Camara, Kirill Kravtsov |
| 13.30-13.50 | ID:93 Variability Mitigation for Grid Stabilizing of PV Systems with Power Limit Control Hyoung-kyu Yang (korea Electronics Technology Institute)*; Dongmyoung Joo (korea Electronics Technology Institute); Yong-su Noh (korea Electronics Technology Institute); Byongjo Hyon (korea Electronics Technology Institute); Jin-hong Kim (korea Electronics Technology Institute) | ID:221 Extendable Multisource Multilevel Inverter for Marine Electric Power System Shadab Murshid (Nanyang Technological University)*; Suman Mondal (Rolls-royce Singapore Pte. Ltd., Singapore); Sivakumar Nadarajan (Rolls-royce Singapore Pte. Ltd., Singapore); Xu Yan (Nanyang Technological University); Boon Hee Soong (Nanyang Technological University) | ID:110 Development of An Fpga Based Real-time Simulation System for DC-DC Boost Converter Erver Ozkan (gazi University); Kazban Koc (gazi University); Emre Issever (gazi University); Mehmet Demirtas (*Faculty Of Technology, Gazi University)* | ID:144 Managing The Energy Flow of A Self-sustaining Multi-source System Through Intelligent Management Techniques Utilizing Artificial Intelligence Abdelhakim Belkaid (bejaia University)*; Chafaa Serir (university Of Bejaia); Djamilia Ziani Rekioua (university Of Bejaia); Samia Bensmail (bouira University); Ihami Colak (Istinye University); Talit Belhou (university A. Mira Of Bejaia); Zahra Mokrani (university Of Bejaia) | ID:56 Energy Management Strategy Fornano-grid in Isolated Areas Abdelhakim Belkaid (bejaia University)*; Said Aissou (bejaia University); Elayzid Amirouche (bejaia University); Ali Berboucha (bejaia University); Nabil Benyahia (esme Paris); Ihami Colak (Istinye University) | | |
| 13.50-14.10 | ID:205 Cost/benefit Analysis of A Point-to-point Lvc Distribution System Oguzhan Ozelcik (Istanbul Technical University)*; Mustafa Bagriyanik (Istanbul Technical University) | ID:220 A Generalized Methodology for Health Index Calculation for Pmsm Drive System Shivam R Chauhan (Nanyang Technological University)*; Krishna Kumar (Nanyang Technological University); Sivakumar Nadarajan (Rolls-royce Electrical); Viswanathan Vaipapuri (Rolls-royce Electrical); Boon Hee Soong (Nanyang Technological University); Hung D Nguyen (Nanyang Technological University, Singapore) | ID:64 Optimizing Electric Vehicle Fleet Operations with Predictive Analytics: A Renewable Energy-centric Approach Ramakrishna Nuvvula S S (nitte Nnamiti)* | ID:145 Design and Model Predictive Control of A Bidirectional Ev Fast Charging Station Operating in A DC Microgrid Izviye Fatimanur Tepe (gazi University); Erdal Irmak (gazi University)* | ID:57 Nature-inspired Algorithm Based Trajectory Planning for Inspection Flying Robot in Smart Grids Abdelhakim Belkaid (bejaia University)*; Nesrine Tenniche (universit  De Bejaia); Boubekeur Mendil (bejaia University); Lahouche Hocine (bejaia University); Ihami Colak (Istinye University); Lyes Tighzert (bejaia University) | | |
| 14.10-14.30 | ID:51 Development of A Gate Driver for A High Power Electric Locomotive Mobility Converter Byongjo Hyon (korea Electronics Technology Institute)*; Hyoung-kyu Yang (korea Electronics Technology Institute); Sang-min Park (korea Electronics Technology Institute); Donb-myung Joo (korea Electronics Technology Institute); Yong-su Noh (korea Electronics Technology Institute) | ID:67 Intelligent Energy Management System for Microgrids Using Reinforcement Learning Polamarasetty P Kumar (Gnr Institute of Technology)* | ID:50 Enhancing Photovoltaic Efficiency Through A Novel Meta-heuristic Algorithm for Maximum Power Point Tracking Bazila Rashid (indian Institute Of Technology Madras)*; K Shanti Swarup (Iit Madras) | ID:227 A challenging Optimal Power Flow with Renewable Energy Sources with The Application Grey Wolf Optimizer Harrouz Abdelkader (Department of Hydrocarbon and Renewable Energy, Laboratory (LEESI), University of Adrar, Algeria)*; Virgil DUMBRAVA (University POLITEHNICA Bucharest); Nawal Taleb (LMSF laboratory) | ID:158 Reliability Analysis of Power System by Incorporating Wind Farm Using Modified Jelly Fish Search Algorithm Archana K C (vardhaman College Of Engineering)* | | |
| 14.30-14.50 | ID:55 Novel Optimal Configuration Approach for Off-grid Microgrid with Hybrid Energy Storage Using Mantis Search Algorithm Saleh A Al Dawasari (cardiff University)*; Fath Anay (cardiff University); Michael S Packianather (cardiff University) | ID:218 Wind Turbine Power Curve Fitting Using Mountain Gazelle Optimizer and Parametric Functions Mehmet Yesilbudak (Nevsehir Haci Bektas Veli University)*; Ahmet Ozcan (Nevsehir Haci Bektas Veli University) | ID:126 Novel Topology for Universal Electric Vehicle Charger Ilan Aharon (ariel University)* | ID:149 A Comparative Analysis of Cuk, Sepic, and Zeta Converters as Maximum Power Point Trackers Abdelhakim Belkaid (bejaia University)*; Slimane Hadj (bejaia University); Korhan Kayisli (gazi University); Ihami Colak (Istinye University); Said Aissou (bejaia University); Lyfia Larbi (universit  De Bejaia) | ID:159 Developing Card-based Surveys: Focus Group Insights for Smart Grid Prosumer Optimization Emmanuel Fragniere (hesso)*; Sarah Sandoz (hes-so Valais-wallis); Nabil Abdennadher (hes-so); Francesco Moresino (hes-so) | | |
| 14.50-15.10 | ID:142 Governing microgrid stability: an application of virtual synchronous generator Fabio Viola (Universit  di Palermo); Rosario Miceli (University of Palermo); Ihami Colak (Istinye University)* | ID:171 A Review on Multi-agent Systems and Jade Applications in Microgrids Adel Nasir (university Of South Carolina)*; Necmi Altin (gazi University); Suleyman Emre Eymaya (gazi University) | ID:115 Hybrid Power System Design and Dynamic Modeling of Signal Repeater Station on Natural Gas Transmission Network Mohsin Jamil (memorial University Of Newfoundland)*; Wajahat Khalid (memorial University Of Newfoundland And Labrador) | ID:236 Comparison of Energy Management and Smart Grid Development Processes of European Union Countries and Turkey with Machine Learning Methods Murat BEKEN (Bolu Abant Izzet Baysal University)*; Onder Eycioglu (Bolu Abant Izzet Baysal University); Batuhan Hangan (Yildiz Technical University) | ID:160 Svr Stability of Series Capacitor Compensated Power System Installed with PV Power Station Under Partial Shading Fawzi Aljowder (retired)* | | |
| 15.10-15.30 | ID:215 Economic Viability and Technical Challenges of Integrating Offshore Wind Energy with Microgrids Kaden Plewe (University of Texas at Austin); Tristan Houy (University of Texas at Austin); Dongmei Chen (University of Texas at Austin)* | ID:234 Electric Vehicle Projection and Incentive Recommendation)ys in T rkiye Merve Bildirici (Gazi University); Orhan KAPLAN (Gazi Universit | ID:235 Quantum Computing Approach to Smart Grid Stability Forecasting Batuhan Hangan (Yildiz Technical University)*; Onder Eycioglu (Bolu Abant Izzet Baysal University); Oğuz Altun (Yildiz Technical University) | | | | |
| 15.30-15.40 | COFFEE BREAK | | | | | | |

Date: 28 MAY 2024

TUTORIAL

15.40-16.40

Speaker:
Professor Andres Annuk
Estonian University of Life Sciences, Estonia

Chairs: Korhan Kayisli, Ahmet Aksöz

TUTORIAL

16.40-17.40

Speaker:
Professor Brayima Dakyo
Université du Havre, France

Chairs: Korhan Kayisli, Ahmet Aksöz

18.00

Gala Dinner

Date: 29 MAY 2024

KEYNOTE

09.00-10.00

Speaker:
Professor João Martins
NOVA School of Sciences and Technology, Universidade NOVA de Lisboa, Portugal
Chairs: Professor Adel NASIRI, Professor Halil Ibrahim BULBUL

10.00-10.10

COFFEE BREAK

KEYNOTE

10.10-11.10

Speaker:
Professor Giovanni de Carne
Institute for Technical Physics at the Karlsruhe Institute of Technology, Germany,
Chairs: Professor Brayima DAKYO, Professor Mamadou B CAMARA

11.10-11.20

COFFEE BREAK

Date: 29 MAY 2024

| ORAL PRESENTATIONS | | ONLINE PRESENTATIONS | | ONLINE PRESENTATIONS | | ONLINE PRESENTATIONS | |
|--------------------|---|--|---|---|------------------------------------|----------------------|--|
| SESSION 21 | CHAIRS: Armando Cordeiro, Pedro Fonte | SESSION 22 | CHAIRS: Mohsin Jamil, Orhan Kaplan | SESSION 23 | CHAIRS: Maral Shadae, Daniel Icaza | SESSION 24 | CHAIRS: Hasan Jamil Apon , Erdal Irmak |
| 11.20-11.40 | ID:20 Life-cycle Assessment of Renewable-based Hydrogen Production Via Pem Electrolyzer in Indonesia Mohammad Hemmati (university Of Southern Denmark); Navid Bayati (university Of Southern Denmark)*; Thomas Ebel (university Of Southern Denmark) | ID:53 Load Frequency Control in Two Area Power Systems in a Smart Grid Environment Mohamed Faradji (Mohamed Bougara University)*; Toufik Madani Layadi (university Of Bordj Bou Arreridj); Ilhami Colak (Istinye University) | ID:47 Comparative Analysis of Vector Control and Backstepping Control Techniques Applied to Wind Systems with Pmsg Fadila Tahiri (laboratory Lddi, University Adrar)*; Harrouz Abdelkader (university Adrar) | ID:17 Study and Simulation of an Efficient Smart MPPT Algorithm Based on Fuzzy Logic Theory Nora REZAIGUIA (University Mohamed El Bachir El Ibrahim, Bordj Bou Arreridj); OUALID AISSA (University of Mohamed El-Bachir El-Ibrahimi, Bordj Bou Arreridj)*; Hicham TALHAOUI (University Mohamed El Bachir El Ibrahim, Bordj Bou Arreridj); KESSAL Abdelhalim (University of Bordj Bou Arreridj); Ilhami Colak (Istinye University) | | | |
| 11.40-12.00 | ID:21 A Single Switch Non-isolated Ultra High Step-up DC-DC Converter with Semiconductors Low Voltage Stress Hossein Gholizadeh (university Of Tehran); Mohammadfazel Dehghan (shahid Beheshti University); Gevork B. Gharehpetian (amirkabir University Of Technology (aut)); Navid Bayati (university Of Southern Denmark)* | ID:112 Fault Classification and Location in Microgrid Using Artificial Neural Network Dharm Dev Kumar (national Institute Of Technology Warangal)*; Mahamad Nabab Alam (nit Warangal) | ID:94 On-grid Pv-ev Charging Station System Fahad Aljohani (islamic University Of Madinah); Ali Zain Alabideen (islamic University Of Madinah); Mohamad Tero (islamic University Of Madinah); Bader Alarmrety (islamic University Of Madinah); Nader Alharbi (islamic University Of Madinah); Mustafa Alrehailli (islamic University Of Madinah); Abdulrahman Ibrahim Alkassem (islamic University Of Madinah)* | ID:127 Improving Inverter-based Resource Resilience: Neural Network Control for Virtual Synchronous Generator Damping Lydia Asare (lehigh University); Ali Hosseinipour (lehigh University); Javad Khazaei (lehigh University)* | | | |
| 12.00-12.20 | ID:46 Compact Integration of Battery Storage System for A Micro Wind Turbine System Emanuele Fedele (university Of Naples Federico Ii)*; Renato Rizzo (university Of Naples Federico Ii) | ID:136 Cnn with Squeeze and Excitation Attention Module for Power System Transient Stability Assessment Miguel Ramirez-gonzalez (zhaw)*; Felix Rafael Segundo Sevilla (zhaw); Petr Korba (zhaw); Rafael Castellanos Bustamante (ineel) | ID:95 Fractional Order Control Technique for Stability Assessment of Hybrid Industrial Microgrid Harshad Ratnakar Akre (g H Raisoni College Of Engineering Nagpur)*; S.p. Nangrani (g H Raisoni College Of Engineering Nagpur) | ID:62 Multi-agent Reinforcement Learning for Autonomous Management of Renewable Energy Microgrids Ramakrishna Nuvvula S S (nitte Nnamit)* | | | |
| 12.20-12.40 | ID:217 Analysis of Sarima Models for Forecasting Electricity Demand Ahmet AksOz (Cumhuriyet universitesi)*; Saadin Oyucu (Adiyaman University); Emre Bicer (Sivas University of Science and Technology); Ramazan Bayindir (Gazi University) | ID:151 Microgrid Power Sharing: Adaptive Vs. Nonlinear Predictive Models Maral Shadaei (lehigh University)*; Saskia Putri (Behigh University); Faegheh Moazeni (lehigh University); Javad Khazaei (lehigh University) | ID:97 Enhancing Cybersecurity of A Hydroelectric Power Plant Using Its Digital Twin Model Ismail Erkek (gazi Universitesi); Erdal Irmak (gazi University)* | ID:63 Distributed Control and Optimization of Electric Vehicle Charging Stations in A Microgrid with Renewable Energy Sources Ramakrishna Nuvvula S S (nitte Nnamit)* | | | |
| 12.40-13.00 | ID:22 Power Generation Forecasting From Solar Plants Based on Weather Conditions for Kazakhstani Region Ruslan Omirgaliyev (astana It University)*; Bakhtyar Kazbekov (astana It University); Nurkhat Zhakiyev (astana It University); Svetlana S Zhakiyeva (I.n. Gumilyov Eurasian National University); Arman Assylkhan (satbayev University) | ID: 194 Power Loss Reduction Using Distributed Generation Sources Considering Protection Coordination and Harmonic Limits Reza Parsi Benekohal (Memorial University of Newfoundland); Ali Akbarzadeh Niaki (Memorial University of Newfoundland); Mohsin Jamil (Memorial University of Newfoundland) | ID: 212 Classification and Comparison of Maximum Power Point Tracking Techniques in DC Micro-Grid Standalone Photovoltaic Systems Isaac Owusu-Nyarko (Regional Maritime University) | ID: 117 Design and Optimization of a Scalable Bidirectional DC-DC Converter for Electric Vehicle Charging Applications using SIC Switches Mohsin Jamil (Memorial University of Newfoundland)*; Burak Muhammetoglu (Memorial University of Newfoundland) | | | |
| 12.40-13.30 | LUNCH | | | | | | |

Date: 29 MAY 2024

| Date: 29 MAY 2024 | | | | | | | |
|----------------------|--|---|--|---|---|----------------------|------------------------------------|
| ONLINE PRESENTATIONS | | ONLINE PRESENTATIONS | | ONLINE PRESENTATIONS | | ONLINE PRESENTATIONS | |
| SESSION 25 | CHAIRS: Nurkhat Zhakiyev, Mohammad Hemmati | SESSION 26 | CHAIRS: Mohamed Faradji, Abdelhakim Belkaid | SESSION 27 | CHAIRS: Fadila Tahir, Harshad Ratnakar Akre | SESSION 28 | CHAIRS: Javad Khazaei, Mohsin Jami |
| 13.30-13.50 | ID:7 Bidirectional DC-DC Converter with High Voltage Step-up/down Ratio for The Interconnection of Unipolar and Bipolar DC Microgrids V. Fernao Pires (estsetubal/lps)*; Armando Cordeiro (isel - lpl); Daniel Foito (estsetubal - lps); Armando Pires (polytechnical Institute Of Setubal) | ID:114 African Vulture Optimization Algorithm for Simultaneous Placement and Sizing of Shunt Capacitors in Radial Distribution System Atif Ali (iut), Md. Mushfiqur Ahmed (Islamic University Of Technology (iut)); Ashif Al Nayem Zeesan (Islamic University Of Technology (iut)); Hasan Jamil Apon (Islamic University Of Technology (iut))*; Md. Shadman Abid (Islamic University Of Technology) | ID:152 Time-Domain Operational Metrics for Real-time Resilience Assessment in DC Microgrids Maral Shadaei (Lehigh University)*; Ali Hosseinipour (Lehigh University); Javad Khazaei (Lehigh University) | ID:203 Suggested Smart Adaptive Load Shedding of an Islanded Microgrid Containing Renewable Resources Ali Akbarzadeh Niaki (Memorial University of Newfoundland); Reza Parsi Benehkohal (Memorial University of Newfoundland); Mohsin Jamil (Memorial University of Newfoundland)* | | | |
| 13.50-14.10 | ID:13 Bidirectional DC-DC Converter to Interlink Bipolar DC Microgrids Based on The Cuk DC-DC Converter Armando Cordeiro (isel - lpl)*; Miguel Chaves (isel-ipl); Paulo Gambôa (isel-ipl); Ricardo Luis (isel); Pedro Fonte (isel); Daniel Foito (estsetubal - lps); J. F. Martins (fct/unl); José Silva (inesc-id, Ist, Universidade De Lisboa); V. Fernao Pires (estsetubal/lps) | ID:96 Energy Savings with Photochromic Materials Okan Gökhan USTA (Republic Of Türkiye Ministry Of National Education)*; Sibel AKKAYA OY (Ordu University); Ali Ekber ÖZDEMİR (Ordu University) | ID:59 Federated Learning-based Energy Forecasting and Trading Platform for Decentralized Renewable Energy Markets Ramakrishna Nuvvula S S (nitte Nmamit)* | ID:113 Hybrid Gwopso Algorithm Based Load Scheduling Approach for PV Integrated Households Asif Ur Rahman Adib (Islamic University Of Technology (iut)); Wasik Billah Ibn Rashid (Islamic University Of Technology (iut)); Md. Asib Rahman Jahin (Islamic University Of Technology (iut)); Hasan Jamil Apon (Islamic University Of Technology (iut))* | | | |
| 14.10-14.30 | ID:180 ESS Design and Management considering Solar PV to fed off-grid EV Charger Pedro Fonte (ISEL)* | ID:209 Campus Electric Load Forecasting Using Recurrent Neural Networks Zain Ahmed (Memorial University of Newfoundland); Mohsin Jamil (Memorial University) | ID:214 Data Analytics and Artificial Intelligence Applied to the Energy Transition. Galapagos case study Daniel Icaza (Catholic University of Cuenca, Cuenca, Ecuador)*; Fernando González-Ladrón | ID:167 Analysis and Optimization of Droop Controller for Microgrid System based on Slime Mould Algorithm Ruqaya Majeed kareem (Misan University)*; MOHAMMED Kh. AL-NUSSAIRI (University of Misan); Ramazan Bayindir (Gazi Univers | | | |
| 14.30-14.50 | ID:210 Estimating Smart Grid Stability with Hybrid RNN+LSTM Deep Learning Approach Saadin Oyucu (Adiyaman University)*; Seref SAGIROGLU (Gazi University); Ahmet AKSÖZ (Cumhuriyet Üniversitesi); Emre Biçer (Sivas University) | ID:211 Fixed-Time Reaching Law-Based Sliding Mode Control for PMSM Speed Control Ferhat Bodur (Gazi University); Orhan KAPLAN (Gazi University) | ID:44 Investigation and Simulation of A Solar Water Pumping System with A Speed-controlled DC Motor Farid Benabida (university Mohamed El Bachir El Ibrahimy Of Bordj Bou Arreridj); Oualid Aissa (university Of Mohamed El-bachir El-ibrahimi, Bordj Bou Arreridj)*; Hicham Talhaoui (university Mohamed El Bachir El Ibrahimy Of Bordj Bou Arreridj); Badreddine Babes (1research Center In Industrial Technologies Crti); Ilhami Colak (Istinye University) | ID:98 Applications, Insights and Implications of Digital Twins in Smart City Management Mustafa Ersan (contectus Global Technology); Erdal Irmak (gazi University)*; Alperen Mustafa M Colak (nagasaki University) | | | |
| 14.50-15.00 | COFFEE BREAK | | | | | | |

Date: 29 MAY 2024

TUTORIAL

15.00-16.00

Speaker:
Professor Innocent Ewean Davidson
Cape Peninsula University of Technology, South Africa

Dr Elutunji Buraimoh
Clemson University, USA

Chairs: Akmet Aksöz, Saadin Oyucu

Closing Ceremony

Presentation Instruction for icSmartGrid 2024 Presenters

Virtual presentation

Presentation time is 20 minutes including 5 minutes Question/Discussion.