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11th INTERNATIONAL CONFERENCE on RENEWABLE ENERGY RESEARCH and APPLICATIONS (ICRERA 2022), Istanbul, Türkiye
18-21 September 2022

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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 RESs
- Power Devices and Driving Circuits for RESs
- Control Techniques for RESs
- Grid Interactive Systems Used in Hybrid RESs
- Performance Analysis of RESs
- 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 RESs 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 2022

Dear Colleagues,

The purpose of the International Conference on Renewable Energy Research and Applications (ICRERA) 2022 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 and the tenth editions of ICRERA in Nagasaki (2012), Madrid (2013), Milwaukee (2014), Palermo (2015), Birmingham (2016), San Diego (2017) and Paris (2018) and Brasov (2019), Glasgow (2020) , Istanbul(2021) in order, the 11th ICRERA 2022 is going to be organized by the technical co-sponsorship of IEEE IES and IAS in Istanbul, Turkey on September 18-21, 2022. Attending ICRERA 2022 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 79 selected papers out of 79 papers at ICRERA2021 were published in IEEE Transactions on Industrial Applications (6 papers), International Journal of Renewable Energy Research (13 Papers), International Journal of Smart Grid (18), International Journal of Engineering Science and Applications (26), and Energies (16). We hope to select a similar rate of papers from the ICRERA 2022 for the journals.

Up to 2022, all papers presented by authors in ICRERA conferences have been cited in IEEE Xplore, SCOPUS and Web of Science (Clarivate Analytics). According to Web of Science (Clarivate Analytics) in 2022; h-index is 24; Average citation per item is 4.3; 5 years Impact Factor is 12.35.

Selected papers from ICRERA-2022 will be also published in the following journals cited in SCI with higher impact factors as:
- IEEE Transactions on Industrial Applications
- International Journal of Renewable Energy Research (ijrer.org)
- International Journal of Smart Grid (ijSmartGrid.org)
- International Journal of Engineering Science and Applications

ICRERA Conferences aim to present important results to the international renewable energy communities 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 of 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 Ilhami COLAK, General Chair, ICRERA 2022

Professor Seref SAGIROGLU, Co-Chair, ICRERA 2022

Professor Fujio KUROKAWA, Co-Chair, ICRERA 2022

KEYNOTE SPEAKERS

Keynote 1: Mr. Masayuki TOBITA, TMEIC, Japan
Date : September 19, 2022 09.40-10.40 AM

Biography:

Mr. TOBITA graduated from the master course of Electrical and Electronic Engineering, Tokyo Institute of Technology in 1994, where he majored in Power Electronics.

He joined Toshiba Corporation in April 1994, developed his career as an engineer and made excellent technical achievements in high-capacity power electronics applications. In October 2003, he moved to Toshiba Mitsubishi-Electric Industrial Systems Corporation (TMEIC), Tokyo, Japan, when the joint venture between Toshiba and Mitsubishi-Electric was established. At that time, he was a Specialist in the Power Electronics Department. He became Senior Manager of Power Electronics Department in 2013 and Senior Manager of Energy & Environment Power Electronics Systems Department in 2014. He became Senior Manager of the Planning & Administration Department in 2017. He was President & CEO of Power Electronics Products Corporation in Houston from 2019. From June 2021 to present, he is Vice President of Power Electronics System division.

Carbon Neutrality Accelerated by Power Electronics

Summary: In Glasgow last year, in COP26, countries discussed the global goal, achieving Carbon Neutrality by 2050. For the conference, IPCC issued the 6th report and suggested that global warming continued at a rather high rate. IEA reported the state of CO_2 emission and suggested that present policies were insufficient for achieving Carbon Neutrality. IEA especially suggested accelerating energy transition by 2030, a milestone to 2050. In addition to those suggestions, the recent geopolitical issue forced countries to focus on energy security and to accelerate renewables.

TMEIC continues to develop power electronics technology under the concept of "PEiE", Power Electronics in Everything. This speech introduces that power electronics is a key technology essential for accelerating energy transition and for achieving Carbon Neutrality.

For accelerating the energy transition, renewables and energy storages play major roles to form the future electric power networks. There, the digital networks will manage the dynamic balancing among generation, energy storage, and consumption. In the fields such as transportation, steel, or synthetic chemistry, Green Hydrogen is expected to accelerate the transition as clean fuel or clean raw material.

For the energy transition, the power electronics technology contributes to various fields. It works in power conversion of renewables and of energy storages. It also contributes to long distance power transmission from remote renewables. For producing Green Hydrogen, the power electronics supplies high DC current to electrolyzers. For industries, the power electronics improves energy efficiency in the motor drive systems. The power electronics supports electrifications by supplying high-frequency power or DC power to induction heating or to arc furnaces, respectively. For managing the future energy network, the IC, information/communication, networks are essential. The power electronics supports the IC networks by feeding stable power.

In summary, the power electronics contribute to form the infrastructures of future clean energy networks in every sector. The power electronics is greatly expected as one of key technologies to accelerate energy transition to Carbon Neutrality.

Keynote 2: Professor Adel Nasiri University of South Carolina, USA
Date   : September 19, 2022 10.50-11.50 AM

Biography:

Professor NASIRI, Fellow IEEE, received B.S. and M.S. degrees from Sharif University of Technology, Tehran, Iran, in 1996 and 1998, respectively, and the PhD degree from Illinois Institute of Technology, Chicago, Illinois, in 2004, all in electrical engineering. He is presently a Distinguished Professor in the Electrical Engineering Department at the University of South Carolina. His research interests are smart and connected energy systems, energy storage, and microgrids. Previously, he worked at the University of Wisconsin-Milwaukee (UWM) from 2005 to 2021 and served in various roles including professor of electrical engineering, 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 on related topics. He also holds seven 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).

Efficient Medium Voltage Solar PV Inverter

Summary: As the cost of solar PV cells have reduced at a rapid pace in the last decade, the inverter, balance of the system, and installation account for 44% of solar PV system total cost. This is a major area of improvement to further reduce the installed cost. Some of the target components cost reduction are medium voltage transformer, low voltage bus duct, materials, and installation. An ongoing project is described in this keynote speech that aims to connect low voltage solar PV systems (700-1500VDC) directly to 13kVAC grid. The project uses a resonant front end to improve efficiency and also to provide voltage step up/down functions. A medium voltage high frequency provides galvanic isolation required for large solar PV installations. A grid side unfolder circuitry with virtually zero switching loss connects the system to the grid. The design and implementation process for the converter is discussed in this talk. In addition, control software and hardware methods and elements are described. The converter size, cost, and results are compared with a benchmark 1MW system.

Keynote 3: Dr Khaled AHMED, University of Strathclyde, Glasgow, UK
Date   : September 20, 2022 09.40-10.40 AM

Biography:

Dr. AHMED received the B.Sc. and M.Sc. degrees from Alexandria University, Egypt in 2002 and 2004, respectively. He received the PhD degree in power electronics applications from the Electronic and Electrical Engineering Department, University of Strathclyde, UK, 2008. In 2011, he was appointed as a Lecturer in Power Electronics at the University of Aberdeen, and was promoted to Senior Lecturer in 2015. Currently, He is a Reader (Professor) in power electronics at the University of Strathclyde (PEDEC Group). He has over 19 years of research experience in power electronics, renewable energy integration, solar energy systems, off-shore wind energy, smart grids, DC/DC Converters and HVDC. He has won funding of £2.8 million as Primary and Co-Investigator on projects funded by EPSRC, the EU, KTP, the British Council, the Royal Society, the Carnegie Trust, the Scottish Funding Council, the Oil and Gas Technology Centre, and industry (Rolls-Royce, Scottish Power, and Scottish and Southern Energy). He has supervised 18 PhD students; 10 have graduated and the others are ongoing. Dr Ahmed has published over 120 technical papers in refereed journals and conferences, 1 book, 1 book chapter, and a patent (PCT/GB2017/051364). Total citations of 4562 and h-index of 28. Two of his journal papers are rated in the top 1% of those cited in the academic field of Engineering (Web of Science). He is a senior member of the Institute of Electrical and Electronics Engineers (IEEE) Industrial Electronics and Power Electronics Societies, IET member, Chartered Engineer, and Fellow of Higher Education Academy (HEA). He serves as a Co Editor-in-Chief of Elsevier Alexandria Engineering Journal, and as an Associate Editor of IEEE Open Journal of the Industrial Electronics Society (OJIES), and IEEE Access.

DC Transmission Systems: Developments, Opportunities and Challenges

Summary: DC grid is a promising choice for future DC transmission systems. It can be defined as a DC transmission network, which includes more than two terminals with at least one meshed DC line. With DC grids there are multiple power-flow paths between two grid terminals. Power flow between two DC grid terminals may not be affected (or partially affected) by tripping a single DC line. DC grids will require some protection technology in order to isolate faulted lines/units allowing the remaining part of the grid to continue power transfer. Normally, any number of new terminals can be added to an existing DC grid.

It is expected that DC grids will eventually evolve into large meshed networks, which will inevitably have multiple DC voltage levels. A DC-DC converter will be needed in order to connect two DC grids operating at different DC voltage levels. One evident DC-DC application is to connect DC cables (which have DC voltage up to 600 kV) with overhead DC lines, which may have a higher DC voltage. The existing HVDC (high-voltage direct-current) links have a wide range of highly optimized DC voltage levels and their possible integration into the DC grid will require DC-DC converters. It is also expected that medium-voltage DC grids, either distribution or collection systems (like those with offshore wind farms) will rapidly develop following acceptance of DC transmission grids, and their connection to DC transmission will require high-stepping ratio DC-DC converters. This role is similar to a transformer function in traditional AC systems.

Nevertheless, even in a DC grid with a single nominal DC voltage there might be a need for DCDC converters in order to regulate the power flow in some cables or DC voltage level at some nodes. These DC-DC converters may have low stepping ratio and perform a similar function to tap-changing transformers and phase-shifting transformers in AC systems. The power flow in DC grids will be primarily controlled using AC/DC converters located at grid terminals (connecting points with external AC grids).

The main objective of the talk is to discuss the DC transmission systems including developments, opportunities and challenges. The talk will discuss DC transmission operation, control and interactions with AC systems. The interactions of voltage source HVDC with AC systems through controls and harmonics will be analyzed. The connection between VSC (Voltage Source Converter) and LCC (Line Commutated Converter) DC systems will be analyzed via DC-DC converters. The talk covers also the latest modular multilevel converter based DC-DC converter topologies. AC and DC faults analysis for different DC-DC converter technologies will be presented. The talk is supported with simulation on MATLAB/SIMULINK software and practical prototype results.

Keynote 4: Professor Seref Sagiroglu, Gazi University, Ankara, Türkiye
Date   : September 20, 2022 10.50-11.50 AM

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); IEEE International Conference on Computer Science and Engineering (www.ubmk.org); IEEE Big Data, Deep Learning and Fighting Cyber Terrorisms (www.ibigdelft.org); IEEE International Conference on Machine Learning and Applications (www.icmla-conferences.org); Big Data Analytics, Security and Privacy Workshop (www.bigdatacenter.gazi.edu.tr); National Cyber Terrorism Conference (www.siberteror.org); Turkey Open Data Conference (www.acikveriturkiye.org); IEEE 5G Summit-Istanbul (www.ieeesummit.org); IPv6 Council Turkey (www.ipv6forumtr.org); National IPv6 Conference (www.ipv6.org).
- also has been founding members of Information Security Association (www.bilgiguvenligi.org.tr); Member of IEEE Biometric Task Force; Turkish Science Research Foundation (www.tubav.org.tr), and The Foundation of the People Caring for the Future (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); International Journal of Information Security Engineering (in Turkish) (www.dergipark.gov.tr/ubgmd) and CyberMag (www.cybermag.com); General Director of FutureTech (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.

TUTORIALS

Tutorial 1: Renewable Energy Sources from the Ocean and their Integration in the Electrical Grid

Date : September 21, 2022- 09.40-10.40 AM

Organizer: Professor V. Fernão PIRES, Polytechnic Institute of Setúbal, Portugal

Biography:

Professor PIRES (M'96–SM'09) received the B.S. degree in Electrical Engineering from Institute Superior of Engineering of Lisbon, Portugal, in 1988 and the M.S. and Ph.D. Degrees in Electrical and Computer Engineering from Technical University of Lisbon, Portugal, in 1995 and 2000, respectively. Since 1991, he has been a member of the teaching staff with the Electrical Engineering Department, Superior Technical School of Setúbal—Polytechnic Institute of Setúbal. He is currently a professor teaching power electronics and control of power converters. He is also a Researcher with the Instituto de Engenharia de Sistemas e Computadores—Investigação e Desenvolvimento em Lisboa (INESC-ID). His work has resulted in more than 250 publications. He is member of IEEE since 1996 and senior member since 2009. He is currently serving in IEEE IES Technical Committee in Power Electronics. His current research interests include the areas of power-electronic converters, fault diagnosis and fault tolerant operation, renewable energy, electrical vehicles, electrical drives, and power quality.

Renewable Energy Sources from the Ocean and their Integration in the Electrical Grid

Summary: In an effort to meet the target for CO2 reduction, onshore renewables have been seen as the solution. In reality, onshore renewables like onshore wind and solar PV has presented a huge growth in the last years. However, there are some countries, in which this high growth starts to become no longer possible. Thus, for countries with large maritime coasts, the solution can be the use of the offshore renewable energies. Although offshore energy harvesting, especially associated to offshore wind generators with fixed foundation have been implemented in large scale, this is still limited to some countries that have conditions for this kind of implementation. In this talk, we will look at the renewable energy sources from the ocean and their integration in the electrical grid. It will be given emphasis to the offshore wind energy and wave energy. Regarding the offshore wind energy, it will be addressed new developments regarding floating offshore wind turbines. It also will be focused the technology associated to these systems, as well as, their integration into the electrical grid. Additionally, various solutions for wave energy will also be addressed. Some developments concerning electrical machines for these systems will also be presented.

Tutorial 2: Large Scale Integration of Off-shore Wind Power Plants in Turkey
Date   : September 21, 2022- 10.50-11.50 AM

Organizer: : Professor Kamil Çağatay BAYINDIR, Ankara Yıldırım Beyazıt University, Türkiye

Biography:

Professor BAYINDIR received B.S. and M.Sc. degrees in Electrical and Electronics Engineering in 1995 and 2000 respectively from the Middle East Technical University (METU) in Ankara, Turkey and Ph.D. degree from Çukurova University, Adana, Turkey in 2006. He worked as a Research Assistant in METU till 2000. Between 2000-2009 he was a member of Sabancı and Erdemir groups in the private sector and he led many industrial projects on generation, transmission and distribution of electrical power. He returned to his career in academia and became a member of Çukurova University in 2009. Dr. Bayındır directed many scientific and industry supported R&D projects. He was a Committee Member in KOSGEB and TÜBİTAK Technology Groups. His main current research interests include electrical power quality, smart grids, energy management in power systems, digitalization in energy. He is currently a Professor in the Electrical and Electronics Engineering Department of Ankara Yıldırım Beyazıt University. He is a member of Turkish TSO TEİAŞ Advisory Board.   He is also the founder and Chairman of the Association of Digitalization in Energy.

Large Scale Integration of Off-shore Wind Power Plants in Turkey

Summary: The use of renewable energy sources (RESs) is continuously increasing worldwide due to several factors, including the depletion of fossil fuels, energy security, and increasing environmental concerns. Wind and solar power plants are the prominent RESs with an installed capacity of 743 GW and 760 GW, respectively, as of 2021.

The cumulative installed wind power capacity in Turkey is 10976 MW and all these WPPs are onshore. Turkey has a large offshore wind power capacity which can contribute to reaching the renewable energy target of Turkey.

The studies presented in this tutorial are a part of the Offshore Wind Farm Large-Scale Integration project in Turkey (WindFlag). This project identified a potential of 1.8 GW OWPP in two phases at the Kiyiköy site located in the Black Sea region.

The whole Turkish grid and OWPP models are implemented using DigSILENT PowerFactory 2021. The operational performance of the power system is tested using actual data provided by TEIAS. The detailed grid code compliance analyses are presented to confirm that the designed large-scale OWPP meets grid code requirements.

The scenarios are carried out to analyze the static and dynamic characteristics of the power grid. The increase in the static stability limit of the power grid in presence of OWPPs is determined. Voltage stability limits of the Turkish power grid are estimated using the PV and QV curves.

The grid code published by the Energy Market Regulator Authority and the Ministry of Energy and Natural Resources in Turkey defines the grid connection criteria for wind and photovoltaic power plants. An elaborate assessment of the Turkish grid code reveals the technical requirements that need to be improved for further integration of onshore/offshore WPPs. Active power control & frequency regulation, reactive power control & voltage regulation, and requirements for voltage ride-through capabilities should be clarified in detail for the Turkish grid code. In this context, the key challenges and recommendations are clearly expressed by considering the dynamic conditions of Turkey's power system.

CONFERENCE PROGRAM SUMMARY

Program Summary of ICRERA 2022, September 18-21, 2022, Istanbul, Türkiye

Sunday, 18 September 2022

13:00-16:00	Registration

Monday, 19 September 2022

Time				
9:10-9:40	**Opening Ceremony (30 Min)** -Yoshinobu Higashi, Former Japan Ambassador to Romania, Honorary Chair ICRERA 2022, Japan -Mr. Hidehiko Kikuchi, Senior Advisor to TMEIC, Honorary Chair ICRERA 2022, Japan -Mr. Yuji Kawagoe, Senior Corporate Advisor to NIHON MECCS Co., Ltd., Japan -Professor Ilhami Colak, General Chair, ICRERA 2022, Turkey -Professor Fujio Kurokawa, General Co-Chair, ICRERA 2022, Japan -Professor Seref Sagiroglu, General Co-Chair, ICRERA 2022, Turkey			
9:40-10:40	**Keynote Speech-I (60 Min)** Mr. Masayuki TOBITA Vice President of TMEIC, Japan			
10:40-10:50	Break			
10:50-11:50	**Keynote Speech-II (60 Min)** Professor Adel Nasiri University of South Carolina, USA			
11:50-13:10	Lunch Break			
13:10-14:50	P1 P2 P3 P4 P5	Session-1 5 PAPERS (5*20=100 Min)	Session-2 5 PAPERS (5*20=100 Min)	Session-3 5 PAPERS (5*20=100 Min)
14:50-15:00	Break			
15:00-17:00	P6 P7 P8 P9 P10 P11	Session-4 6 PAPERS (6*20=120 Min)	Session-5 6 PAPERS (6*20=120 Min)	Session-6 6 PAPERS (6*20=120 Min)
18:00-20:00	WELCOME PARTY			

Tuesday 20 September 2022

Time				
9:40-10:40	**Keynote Speech-III (60 Min)** Dr. Khaled AHMED Strathclyde University, Glasgow, UK			
10:40-10:50	Break			
10:50-11:50	**Keynote Speech-IV (60 Min)** Professor Seref Sagiroglu, Gazi University, Ankara, Türkiye			
11:50-13:10	Lunch Break			
13:10-14:50	P12 P13 P14 P15 P16	Session-7 5 PAPERS (5*20=100 Min)	Session-8 5 PAPERS (5*20=100 Min)	Session-9 5 PAPERS (5*20=100 Min)
14:50-15:00	Break			
15:00-17:20	P17 P18 P19 P20 P21 P22 P23	Session-10 7 PAPERS (7*20=140 Min)	Session-11 7 PAPERS (7*20=140 Min)	Session-12 7 PAPERS (7*20=140 Min)
	GALA DINNER			

Wednesday 21 September 2022

Time				
9:40-10:40	**Tutorial-I (60 Min)** Professor V. Fernão Pires Polytechnic Institute of Setúbal, Portugal			
10:40-10:50	Break			
10:50-11:50	**Tutorial-II (60 Min)** Professor Kamil Çağatay BAYINDIR Ankara Yıldırım Beyazıt University, Türkiye			
11:50-13:10	Lunch Break			
13:10-14:50	P24 P25 P26 P27 P28	Session-13 5 PAPERS (5*20=100 Min)	Session-14 5 PAPERS (5*20=100 Min)	Session-15 5 PAPERS (5*20=100 Min)
14:50-15:00	Break			
15:00-17:20	P29 P30 P31 P32 P33 P34 P35	Session-16 7 PAPERS (7*20=140 Min)	Session-17 6 PAPERS (6*20=120 Min)	Session-18 6 PAPERS (6*20=120 Min)
17:20-17:40	Closing Ceremony			

CONFERENCE PROGRAM

SEPTEMBER 18, 2022 – SUNDAY

	Sunday, 18 September 2022
13:00-16:00	Registration

SEPTEMBER 19, 2022 – MONDAY

9:10-9:40	**Opening Ceremony** **-Yoshinobu Higashi, Former Japan Ambassador to Romania, Honorary Chair ICRERA 2021, Japan** **-Mr. Hidehiko Kikuchi, Senior Advisor to TMEIC, Honorary Chair ICRERA 2021, Japan** **-Mr. Yuji Kawagoe, Senior Corporate Advisor to NIHON MECCS Co., Ltd., Japan** **-Professor Ilhami Colak, General Chair, ICRERA 2022, Turkey** **-Professor Fujio Kurokawa, General Co-Chair, ICRERA 2022, Japan** **-Professor Seref Sagiroglu, General Co-Chair, ICRERA 2022, Turkey** **Chairs: Professor Nobumasa MATSUI, Professor Adel NASIRI**
9:40-10:40	**Speaker: Mr. Masayuki TOBITA, Vice President of TMEIC, Japan.** **Title: Carbon Neutrality Accelerated by Power Electronics** **Chairs: Professor Fujio KUROKAWA, Professor Ramazan BAYINDIR**
10:40-10:50	**BREAK**
10:50-11:50	**Speaker: Professor Adel Nasiri University of South Carolina, USA** **Title: Efficient Medium Voltage Solar PV Inverter** **Chairs: Professor V. Fernão PIRES, Professor Seref SAGIROGLU**
11:50-13:10	**LUNCH BREAK**

SEPTEMBER 19, 2022 – MONDAY

	PARALLEL PRESENTATIONS		
	Date: 19 SEPT 2022		
	PARALLEL SESSION A	**PARALLEL SESSION B**	**PARALLEL SESSION C**
SESSION 1	CHAIRS:V. Fernao Pires, Korhan Kayıslı	**SESSION 2** CHAIRS: Fabio Viola, Mehmet Yesilbudak	**SESSION 3** CHAIRS: Abdelhakim Belkaid, Nur Sarma
13:10-13:30	**ID:4 A Robust Wide Area Control of DFIG Wind Energy System for Damping Inter-area Oscillations** Rama Krishna (Gmr)*	**ID:204 Economical Synthesis of Biodiesel by Using Waste Chicken Bone Derived Doped Calcium Oxide Catalysts** Ayesha Mohyuddin (University of Management and Technology Lahore)*; Hafiz Muhammad Ahmad (University of Management and Technology Lahore); Ahtisham Haider (University of Management and Technology Lahore); Tonni Agustiono Kurniawan (Xiamen University, Xiamen); Jamil Anwar (University of Management and Technology Lahore); Amara Dar (University of Punjab, Lahore)	**ID:18 On αβ Delay Signal Cancelation Phase-locked Loop for DC-Offset Rejection** Issam Smadi (Jordan University of Science & Technology)*
13:30-13:50	**ID:5 Dispatchable and non-dispatchable distributed generation reactive power coordination with reactive power-controlled devices using grey wolf optimizer** Rama Krishna (Gmr)*	**ID:78 Design and Characterisation of an Alkaline Electrolyser** Jorben Mus (Ku Leuven)*; Bram Vanhoutte (Ku Leuven); Sam Schotte (Vives); Steven Fevery (Ku Leuven); Steven K. Latré (Ku Leuven); Michael Kleemann (Ku Leuven); Frank Buysschaert (Ku Leuven)	**ID:19 Influence of power and speed laser parameters in laser doping selective phosphorus emitter** Samir Meziani (Research Center On Semiconductors Technology For Energetics)*
13:50-14:10	**ID:37 Efficient Abnormal Building Consumption Detection by Deep Learning LSTM IOT Data Classification** 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.)	**ID:79 CFD Modelling and Simulation of PEMFCs in STAR-CCM+** Jorben Mus (Ku Leuven)*; Siebert Mylle (Ku Leuven); Sam Schotte (Ku Leuven); Steven Fevery (Ku Leuven); Steven K. Latré (Ku Leuven); Frank Buysschaert (Ku Leuven)	**ID:23 Charging energetic and exergetic evaluation of a combined solar cooking and thermal energy storage system** Ashmore Mawire (North-west University)*
14:10-14:30	**ID:47 Master-Slave Control of Battery/Supercapacitor Based Hybrid Energy Storage System for E-Vehicle Application** Aqeel Ur Rahman (Università Degli Studi Di Palermo); Nicola Campagna (University of Palermo); Vincenzo Castiglia (University of Palermo); Antonino Oscar Di Tommaso (University of Palermo); Fabio Massaro (University of Palermo); Rosario Miceli (University of Palermo); Fabio Viola (Università Di Palermo)*	**ID:188 Hybrid Active Power Filter Using a Filter-Less Extraction Technique** Abdallah Sami El Ghaly (Beirut Arab University)*; Mohamad Tarnini (Beirut Arab University); Nazih Moubayed (Lebanese University); Khaled Chahine (American University of The Middle East)	**ID:25 The Controller Design of the Bi-directional Three Level Converter** Han Junhyoek (Korea National University of Transportation)*; Kim Il-song (Korea National University of Transportation)
14:30-14:50	**ID:66 A Proposal of Sinusoidal Voltage Source Fed Optimal Current Control for IM with Active LC Filter by IRM-ILQ Control** Masahiro Watabe (Shibaura Institute of Technology)*; Ayumu Okubo (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)	**ID:74 Model Predictive Control Based Improved Techno-Economic Control Strategy for Photovoltaic-Battery Microgrids** Fatma Selim (Egypt-japan University For Science and Technology)*; Mokhtar Aly (Facultad De Ingeniería, Arquitectura Y Diseño, Universidad San Sebastián, Bellavista 7, Santiago)	**ID:27 Optimal Battery Sizing For Electric Vehicles Considering Battery Ageing** Ali Gezer (Aselsan)*; Baki Zafer Unver (Middle East Technical University); Emine Bostanci (Middle East Technical University)
14:50-15:00	BREAK	BREAK	BREAK

SEPTEMBER 19, 2022 – MONDAY

	PARALLEL PRESENTATIONS		
	Date: 19 SEPT 2022		
	PARALLEL SESSION A	**PARALLEL SESSION B**	**PARALLEL SESSION C**
	SESSION 4 CHAIRS:Wahiba Yaici, Erdal Irmak	**SESSION 5** CHAIRS: Yudai Furukawa, Nihat Ozturk	**SESSION 6** CHAIRS:Ayesha Mohyuddin, Necmi Altin
15:00-15:20	**ID:28 Development of an Electric Solar Array Superblock in Open Source Software SCILAB/Xcos** Zurab Dzhendubaev (Mpei)*	**ID:38 Compact and Highly Efficient Coil Design Using a Repeater Coil in WPT System for BEV/PHEVs** Daisuke Suzuki (Soken.inc)*	**ID:48 Low-power Renewable Possibilities for Geothermal IoT Monitoring Systems** Radek Byrtus (Vysoká Škola Bánská - Technická Univerzita Ostrava)*; Radim Hercik (Vysoká Škola Bánská - Technická Univerzita Ostrava); J Koziorek (Vsb-tu Ostrava); Birgitta Martinkauppi (University of Vaasa); Jakub Dohnal (Vysoká Škola Bánská - Technická Univerzita Ostrava); Tuomas Rauta (University of Vaasa)
15:20-15:40	**ID:29 Continuous Power Transfer Control of Triple Active Bridge Converter during Magnetic Saturation** Kazuma Suzuki (Soken)*; Seiji Iyasu (Soken); Yuji Hayashi (Soken); Yuichi Handa (Denso)	**ID:179 Performance of Dye-Sensitized Solar Cells Based on Zinc Oxide Nanostructures** Borhan A Albiss (Jordan University of Science and Technology)*	**ID:57 Increasing Renewable Energy Participation in Sudan** Mohammed Gmal Osman (University Politehnica of Bucharest); Dana-alexandra Ciupageanu (University Politehnica of Bucharest); Gheorg Lazaroiu (University Politehnica of Bucharest)*; Ionel Pisa (Up Bucuresti)
15:40-16:00	**ID:30 Soft-Switching Technique by Transfer Frequency and Secondary Voltage Control in Wireless Power Transfer System Using a Matrix Converter** Chikara Morimoto (Nagoya Institute of Technology)*; Takaharu Takeshita (Nagoya Institute of Technology)	**ID:41 Experimental Investigation of Cooling PV Panels Using Nanofluids Calcium Carbonate (Caco3), Ferro Magnetite (Fe3o4), Water and Natural Air** Munzer Ebaid (Philadelphia University)*; Ayoup M Ghrair (Al-balqa Applied University); Feras Batarseh (Wathba Investment Co.); James Rescow (University of Bath); Chris Bowen (University of Bath)	**ID:58 Decimal States Smart Grid Operations Concept : Technical Solution and Benefit for Renewable Energy Integration** Kiswendsida Elias Ouedraogo (Izmir Economics University)*; Pinar Ekim (Izmir Economics University); Erhan Demirock (Dokuz Eylul Universi
16:00-16:20	**ID:31 MPPT Algorithm with Closed-Loop Control of the Input Voltage of a Boost Converter in PV Systems** Hanene Bousmaha (Belhadj Bouchaib University)*	**ID:43 Transport Service Electrification in Developing Countries: Case Study in Massawa-Asmara** Cristian G Colombo (Politecnico Di Milano); Alessandro Saldarini (Politecnico Di Milano); Wahiba Yaici (Canmetenergy Research Centre / Natural Resources Canada); Morris Brenna (Politecnico Di Milano); Michela Longo (Politecnico Di Milano)*	**ID:63 Multi Input-Multi Output (MIMO) converter system fed by Wind Energy** Fethi Batincan Gurbuz (Gazi University); Korhan Kayisli (Gazi University)*; Sevki Demirbas (Gazi University); Ramazan Bayindir (Gazi University); Ilhami Colak (Nisantasi University); Mariacristina Roscia ("university of Bergamo, Italy")
16:20-16:40	**ID:35 Educational Platform for Closed Loop AC Variable Speed Drive based on Programmable Logic Controller** Adelina Maria Cirstoiu (University Politehnica of Bucharest)*; Aurel Chirila (Universitatea Politehnica Din Bucuresti); Dragos Deaconu (Upb)	**ID:44 Novel TSC-based Voltage Controller for a Stand-Alone Induction Generator** Naoki S Anggito (Kyoto University of Advanced Science)*; Fuat Kucuk (Kyoto University of Advanced Science)	**ID:64 Short-Term Wind Energy Forecasting with Independent daytime/Nighttime machine Learning Models** Rami A Al-hajj (American University of The Middle East)*; Mohamad Fouad (Mansoura University); Ali Assi (Smieee); Emad Mabrouk (American University of The Middle East)
16:40-17:00	**ID:36 Reduction in Weighted Average Cost of Generation by Utilizing ToU Pricing Models: Study from Pakistan** Hafiz Owais Ahmad Khan (Lums)*; Muhammad Usman Tahir (Aalborg University); Aleena Ahmad (Aleena Ahmad); Naveed Arshad (Lahore University of Management Sciences)	**ID:46 Virtual Synchronous Generator: An application to microgrid stability** Guido Ala (University of Palermo); Antonino Oscar Di Tommaso (University of Palermo); Rosario Miceli (University of Palermo); Claudio Nevoloso (University of Palermo); Gioacchino Scaglione (Università Degli Studi Di Palermo); Giuseppe Schettino (University of Palermo); Fabio Viola (Università Di Palermo)*	**ID:65 Modelling "Delegated Autonomy" in Cognitive Household Digital Twins** Kankam Adu-kankam (Nova University Od Lisbon)*; Luis Camarinha-matos (Nova University of Lisbon)
18:00-20:00	**WELCOME PARTY**		

SEPTEMBER 20, 2022 – TUESDAY

	Date: 20 SEPT 2021
9:40-10:40	**Speaker: Dr Khaled Ahmed, University of Strathclyde, Glasgow, UK** **Title: DC Transmission Systems: Developments, Opportunities and Challenges** **Chairs: Tadashi SUETSUGU, Mehdi BAGHERI**
10:40-10:50	**BREAK**
10:50-11:50	**Speaker: Professor Seref Sagiroglu, Gazi University, Ankara, Türkiye** **Title: Big Data Analytics, Security and Privacy Issues in Smart Energy Systems** **Chairs: Professor Halil Ibrahim BULBUL, Professor V. Fernao PIRES**
11:50-13:10	**LUNCH BREAK**

SEPTEMBER 20, 2022 – TUESDAY

	PARALLEL PRESENTATIONS		
	Date: 20 SEPT 2022		
	PARALLEL SESSION A	**PARALLEL SESSION B**	**PARALLEL SESSION C**
SESSION 7 CHAIRS: Ayesha Mohyuddin, Mehnet Demirtas		**SESSION 8** CHAIRS: Dan M. Ionel, Hacı Mehmet Sahin	**SESSION 9** CHAIRS:Han Junnhyoek, Erdal Bekiroglu
13:10-13:30	**ID:67 Evaluation of EV travel capabilities in relation to charging infrastructure in the Spanish context** Andrea Di Martino (Politecnico Di Milano)*; Michela Longo (Politecnico Di Milano); Dario Zaninelli (Politecnico Di Milano); Davide Andrea Brioschi (Politecnico Di Milano)	**ID:75 Wind Power Penetration Effect on Unscheduled Interchange Rate in an Indian Power System under Availability Based Tariff** Gargi Konar (Jadavpur University)*; Niladri Chakraborty (Jadavpur University); Kamal K. Mandal (Jadavpur University)	**ID:81 New Dynamic and self-adaptive Incremental Conductance Algorithm for Standalone PV system** Abdelhakim Belkaid (Bordj Bou Arreridj University)*; Celia Aoughlis (Bejaia University); Ilhami Colak (Nisantasi University); Ouahib Guenounou (University of Bejaia); Mohand Akli Kacimi (Bejaia University)
13:30-13:50	**ID:68 Importance Of Using Renewable Energy Sources Within The Scope Of Green Deal Preparations** Betul Ersoz (Gazi University)*; Halil Ibrahim Bulbul (Gazi University)	**ID:76 Trigger Time Optimization for Multistage Railgun Using Genetic Algorithm** Rumeysa Ozer (Gazi University); Nihat Ozturk (Gazi University)*	**ID:82 Resonance Phenomenon during Rectification in a System with a Permanent Magnet Generator** Yuto Iwasaki (Aichi Institute of Technology)*; Tadashi Hosoe (Aichi Institute of Technology); Kazuki Ikeda (Aichi Institute of Technology); Kazuto Yukita (Aichi Institute of Technology); Toshiya Nanahara (Aichi Institute of Technology); Yasuyuki Goto (Aichi Institute of Technology)
13:50-14:10	**ID:69 Experimental Verification of a Frond-End AC-DC Converter Capable of Stabilizing Ground Potential in a Multi-Level DC Distribution System** Ryoji Tsuruta (Mitsubishi Electric Corporation)*; Takuya Kataoka (Mitsubishi Electric Corporation); Tsuguhiro Takuno (Mitsubishi Electric Corporation)	**ID:77 A Short Review on Explainable Artificial Intelligence In Renewable Energy and Resources** Betul Ersoz (Gazi University)*; Seref Sagiroglu (Gazi University); Halil Ibrahim Bulbul (Gazi University)	**ID:83 Power control methods at the power receiving points of the microgrids** Aoi Tanaka (Aichi Institute of Technology)*; Kazuki Ikeda (Aichi Institute of Technology); Kazuto Yukita (Aichi Institute of Technology); Toshiya Nanahara (Aichi Institute of Technology); Takuya Goto (Aichi Institute of Technology)
14:10-14:30	**ID:73 Hybrid J-Type Darrieus and Savonius Vertical Axis Wind Turbine Capable of Harvesting Roadside Wind Energy** James Angelo C. Lipiao (Mapua University)*; Nicca Mae M Divina (Mapua University); Ronald Vincent Santiago (Mapua University); Carlos Hortinela Iv (Mapua University)	**ID:14 Cost Savings Estimation for Solar Energy Consumption Using Machine Learning** Rajvi A Parekh (Dwarkadas J Sanghvi College of Engineering)*; Palka Dhirawani (Dwarkadas J Sanghvi College of Engineering); Tanishq S Kandoi (Dwarkadas J Sanghvi College of Engineering); Kriti Srivastava (D. J. Sanghvi College of Engineering)	**ID:84 A Case Study: Standalone Hybrid Renewable Energy Systems** Ruhi Zafer Caglayan (Ostim Technical University); Korhan Kayisli (Gazi University)*; Nurkhat Zhakiyev (Astana It University); Harrouz Abdelkader (Department of Hydrocarbon and Renewable Energy, Laboratory (Leesi), University of Adrar, Algeria); Ilhami Colak (Nisantasi University)
14:30-14:50	**ID:17 A Fault Diagnosis Scheme Based on the Normalized Indexes of the Images eccentricity for a Multilevel Converter of a Switched Reluctance Motor Drive** Tito Amaral (Estsetubal/ips); V. Fernao Pires (Estsetubal/ips); Daniel Foito (Estsetubal - Ips); Armando Cordeiro (Isel); Miguel Chaves (Isel); José-inácio Rocha (Estsetubal/ips)*; Armando Pires (Polytechnical Institute of Setubal); J. F. Martins (Fct/unl)	**ID:15 A DC-DC Converter with Capability to Support the Voltage Balance of DC Bipolar Microgrids** V. Fernao Pires (Estsetubal/ips)*; Armando Cordeiro (Isel - Ipl); Daniel Foito (Estsetubal - Ips); José Silva (Inesc-id, Ist, Universidade De Lisboa)	**ID:127 Basic Characteristics of Converters with Special Winding Structure Transformers** Kazuki Ikeda (Aichi Institute of Technology)*; Yuto Iwasaki (Aichi Institute of Technology); Aoi Tanaka (Aichi Institute of Technology); Tsuyo Nishitani (Aichi Institute of Technology); Kazuto Yukita (Aichi Institute of Technology); Toshiya Nanahara (Aichi Institute of Technology); Yasuyuki Goto (Aichi Institute of Technology); Akinori Kato (Kawamura Electric Inc.)
14:50-15:00	**BREAK**	**BREAK**	**BREAK**

SEPTEMBER 20, 2022 – TUESDAY

	Date: 20 SEPT 2022		
	PARALLEL SESSION A	**PARALLEL SESSION B**	**PARALLEL SESSION C**
	SESSION 10 CHAIRS:Zurab Dzhendubaev, Kazuma Suzuki	**SESSION 11** CHAIRS:Issam Smadi , José-Inácio Rocha	**SESSION 12** CHAIRS: IL-Song, Kim, Gheorghe Lazaroiu
15:00-15:20	**ID:128 Limiting transients for grid-forming inverters using a phase limiter** Mahmoud Alsadat (Skolkovo Institute of Science and Technology); Federico M Ibanez (Skolkovo Institute of Science and Technology)*; Prashant Pant (Technical University of Munich); Vedran Peric (Technical University of Munich); Petr Vorobev (Skolkovo Institute of Science and Technology); Vladimir Terzija (Skolkovo Institute of Science and Technology)	**ID:136 Smart contracts for households managed by Smart Meter equipped with Blockchain and chain 2** Mariacristina Roscia ("university of Bergamo, Italy")*; George Cristian Lazaroiu (University Politehnica of Bucharest); Korhan Kayisli (Gazi University); Ilinca Andreea Steriu (Bucharest University of Economic Studies)	**ID:143 Comparison of oils from the low temperature pyrolysis of algal biomass and bituminous coal in a rotary kiln** Bothwell Nyoni (Nelson Mandela University)*; Shanganyane Hlangothi (Nelson Mandela University)
15:20-15:40	**ID:129 Basic study on power consumption of air conditioning equipment** Tsuyoshi Nishitani (Aichi Institute of Technology)*; Kazuki Ikeda (Aichi Institute of Technology); Yuto Iwasaki (Aichi Institute of Technology); Aoi Tanaka (Aichi Institute of Technology); Kazuto Yukita (Aichi Institute of Technology); Tokimasa Goto (Aichi Institute of Technology); Katsunori Mizuno (Aichi Institute of Technology); Yasuyuki Goto (Aichi Institute of Technology)	**ID:137 Lithium-Ion Polymer Battery Modeling for Dynamic Wireless Power Transfer in UAV Application** Bayandy Sarsembayev (Nazarbayev University)*; Seyed Saeid Heidari Yazdi (Nazarbayev University); Adilkhan Kapanov (Nazarbayev University); Mehdi Bagheri (Electrical and Computer Engineering Department, Nazarbayev University)	**ID:144 A Multi-Carrier Energy Method for Self-Consumption Enhancement in Residential Buildings** Arshyn Zhanbolatov (Astana It University); Svetlana S Zhakiyeva (L.n. Gumilyov Eurasian National University); Balzhan Azibek (Astana It University); Nurkhat Zhakiyev (Astana It University)*; Korhan Kayisli (Gazi University); Ideyat Bapiyev (Zhangir Khan West Kazakhstan Agrari Technical University)
15:40-16:00	**ID:130 A mid-IR Plasmonic Graphene Nanorectenna-based Energy Harvester to Power IoT Sensors** Rocco Citroni (University of Rome Tor Vergata); Giovanni D'arrigo (University of Palermo); Patrizia Livreri (University of Palermo)*	**ID:138 Comprehensive Analysis of MPPT Control Approaches under Partial Shading Condition** Hicham Oufettoul (Emi)*; Saad Motahhir (Usmba); Ghassane Aniba (Mohammadia School of Engineers (Emi), Mohammed V University In Rabat); Ibtihal Ait Abdelmoula (Green Energy Park)	**ID:145 Voltage Recovery Through Active-Reactive Coordination of Solar PV Inverters During Grid Fault** Muhammad Khalid (King Fahd University of Petroleum and Minerals (Kfupm)*
16:00-16:20	**ID:132 Hybrid Renewable Energy Systems with Hydrogen and Battery Storage Options for Stand-alone Residential Building Application in Canada** Wahiba Yaici (Canmetenergy Research Centre / Natural Resources Canada)*; Evgueniy Entchev (Canmetenergy Research Centre / Natural Resources Canada); Andres Annuk (Estonian University of Life Sciences); Michela Longo (Politecnico Di Milano)	**ID:139 Sensor placement strategy for locating photovoltaic array failures** Hicham Oufettoul (Emi)*; Saad Motahhir (Usmba); Ghassane Aniba (Mohammadia School of Engineers (Emi), Mohammed V University In Rabat); Ibtihal Ait Abdelmoula (Green Energy Park)	**ID:173 Parameter Selection of an LLC Resonant Converter for PV Application** Saban Ozdemir (Gazi University); Necmi Altin (Gazi University); Ahmad El Shafei (University of Wisconsin Milwaukee); Adel Nasiri (University of South Carolina)*"
16:20-16:40	**ID:133 Analytical Investigation of PV Panel Operated at Maximum Power Point on DC Microgrid** Kemal Celik (Gazi University, Graduate School of Natural and Applied Sciences); Mehmet Demirtas ("faculty of Technology, Gazi University")*; Nihat Ozturk (Gazi University)	**ID:140 Robust Optimal Virtual Inertia Control for Microgrid Frequency Regulation Considering High Renewable Energy Penetration** Muhammad Maaruf (King Fahd University of Petroleum and Minerals)*; Sami El Ferik (King Fahd University of Petroleum and Minerals); Fahad Saleh Al-ismail (Kfupm); Muhammad Khalid (King Fahd University of Petroleum and Minerals (Kfupm))	**ID:175 Short-Term forecasting of photovoltaic power in an isolated area of Ecuador using deep learning techniques** Richard Guanoluisa (Universidad De Las Fuerzas Armadas Espe); Alexander Ibarra (Universidad De Las Fuerzas Armadas Espe); Diego Arcos aviles (Universidad De Las Fuerzas Armadas Espe)*; Wilmar Martinez (Prof.); Emilia Motoasca (Vito-energyville); Edit Francesc Guinjoan (Universitat Polit?cnica De Catalunya - Barcelonatech)
16:40-17:00	**ID:134 Machine Learning based malware detection for Secure Smart Grids** Kevin Immanuel Gubbi (University of California, Davis)*; Han Wang (Temple University, Philadelphia); Hossein Sayadi (California State Univ., Long Beach); Houman Homayoun (University of California Davis)	**ID:141 Improving Fault Ride Through Capability of DFIG with Fuzzy Logic Controlled Crowbar Protection** Erdal Bekiroglu (Bolu Abant Izzet Baysal University); Muhammed Duran Yazar (Bolu Abant Izzet Baysal University)*	**ID: 178 Increasing Total Hosting Capacity Using Energy Storages During Renewable Energy Expansion** Balzhan Azibek (Astana IT University); Yerbol Akhmetbekov (Astana IT University); Aliya Ibraimova (Astana IT University); Nurkhat Zhakiyev (Astana IT University)*
17:00-17:20	**ID:135 Interoperability Control/Monitoring of Multi-Paralleled Inverters by IEC61850 Protocol** Alperen Mustafa Colak (Tmeic)*; Yoshihiro Tawada (Tmeic); Yasuaki Mitsugi (Toshiba Mitsubishi-electric Industrial Systems Corporation); Ruben Inzunza (Tmeic); Tatsuaki Amboh (Tmeic)	**ID:142 One-Step Solution for Sizing and Allocation of Battery Energy Storage System Using DC Optimal Power Flow** Mohammed A Abdulgalil (King Fahd University of Petroleum & Minerals)*; Muaiz Ali (King Fahd University of Petroleum & Minerals); Fahad Saleh Al-ismail (Kfupm); Muhammad Khalid (King Fahd University of Petroleum and Minerals (Kfupm))	**ID:194 Review and Comparative Analysis of Metaheuristic MPPT Algorithms in PV Systems Under Partial Shading Conditions** Izviye Fatimanur Tepe (Gazi University); Erdal Irmak (Gazi University)*
18:00-20:00	**GALA DINNER**		

SEPTEMBER 21, 2022 – WEDNESDAY

	Date: 21 SEPT 2021
9:40-10:40	**Tutorial Speaker: Professor V. Fernão Pires, Polytechnic Institute of Setúbal, Portugal** **Title: Renewable Energy Sources from the Ocean and their Integration in the Electrical Grid** **Chairs: Professor Fabio VIOLA, Dr. Wahiba YAICI**
10:40-10:50	**BREAK**
10:50-11:50	**Tutorial Speaker: Professor Kamil Çağatay Bayındır, Ankara Yıldırım Beyazıt University, Turkiye** **Title: Large Scale Integration of Off-shore Wind Power Plants in Turkey** **Chairs: Professor Mariacristina ROSCIA, Professor Abdelhakim BELKAID**
11:50-13:10	**LUNCH BREAK**

SEPTEMBER 21, 2022 – WEDNESDAY

PARALLEL PRESENTATIONS		
Date: 21 SEPTEMBER 2022		
PARALLEL SESSION A	PARALLEL SESSION B	PARALLEL SESSION C
SESSION 13 CHAIRS: Gargi Konar, Jorben Mus	SESSION 14 CHAIRS:Mariacristina Roscia, Nurkhat Zhakiyev	SESSION 15 CHAIRS: Borhan A Albiss, Mehmet Yesilbudak
13:10-13:30 **ID:210 A TOPSIS Model to Support Smart Appliance Decision Energy Management in Smart Grid** Abdulrahman Ibrahim Alkassem (Islamic University of Madinah)*; Mishaal Alkaabi (Umm Al-qura University)	**ID:187 A Novel MPPT Algorithm based on Aquila Optimizer under PSC and Implementation using Raspberry** Hicham Karmouni (Sidi Mohamed Ben Abdellah University)*; Saad Motahhir (Usmba); Idriss Dagal (Yildiz Technical University); Hassan Qjidaa (Usmba); Mhamed Sayyouri (Fsdm)	**ID:16 Hybrid Topology Optimization of A Pmsm Based on Global and Local Method for Lower Torque Rippel and Volume** Shabnam Ruzbehi (fau)*
13:30-13:50 **ID:181 Energy audit and management on residential and commercial building : A case study** Mohammed Tarek Hassan (Arab Academy For Science and Technology and Maritime Transportation)*; Mostafa Abd_el-geliel (Arab Academy For Science, Technology and Maritime Transport); Mostafa Hamad (Arab Academy For Science, Technology and Maritime Transport)	**ID:39 Anomaly Prediction of Wind Turbines using Metric Learning with Vibration Data** Masaki Takanashi (Toyota Central Research and Development Laboratories Incorporated)*; Shuichi Sato (Toyota Central Research and Development Laboratories Incorporated)	**ID:195 kNN Classifier Applications in Wind and Solar Energy Systems** Mehmet Yesilbudak (Nevsehir Haci Bektas Veli University)*; Ahmet Ozcan (Nevsehir Haci Bektas Veli University)
13:50-14:10 **ID:182 A Decentralized Multiagent-Based Robust Backstepping Control for Restoring Secondary Voltage and Frequency of autonomous Microgrids** Muhammad Maaruf (King Fahd University of Petroleum and Minerals)*; Sami El Ferik (King Fahd University of Petroleum and Minerals); Fahad Saleh Al-ismail (Kfupm); Muhammad Khalid (King Fahd University of Petroleum and Minerals (Kfupm))	**ID:189 Investigation of DFIG Controller Signals under Variable Speed Operating Condition** Nur Sarma (Durham University)*	**ID:196 Digital Peak Current Mode Control DC-DC Converter for Renewable Energy System** Yudai Furukawa (Fukuoka University)*; Yuichiro Shibata (Unknown); Tadashi Suetsugu (Fukuoka University); Ilhami Colak (Nisantasi University); Fujio Kurokawa (Nagasaki Institute of Applied Science)
14:10-14:30 **ID:183 Fuzzy-MPPT Controller Based Solar Shunt Active Power Filter** Abdelhakim Belkaid (Bordj Bou Arreridj University)*; Mustapha Sara (University of Bordj Bou Arreridj); Ilhami Colak (Nisantasi University); Ghania Boudechiche (University of Mohamed El-bachir El-ibrahimi, Bordj Bou Arreridj); Korhan Kayisli (Gazi University)	**ID:191 Indoor Photovoltaic Energy Harvesting and Power management for IoT devices** Toshihiko Ishiyama (Hachinohe Institute of Technology)*	**ID:197 Three-Phase Grid-Connected Five-Level Packed U-Cell (PUC-5) Inverter Design** Ahmet Yuksel (Tubitak); Necmi Altin (Gazi University)*
14:30-14:50 **ID:184 Microbial fuel cells for depollution of stagnant water and production of electrical energy** Youssef Naimi (University of Hassan Ii Casablanca, Faculty of Sciences Ben M'sik, Casablanca)*; Siham Elmazouzi (University of Hassan Ii Casablanca, Faculty of Sciences Ben M'sik, Casablanca); Ilham Zerdani (Hassan Ii University of Casablanca, Faculty of Sciences Ben M'sik)	**ID:192 Electromagnetic Vibration Reduction of Permanent Magnet Synchronous Motor Using Particle Swarm Optimization Based on Response Surface** Lei Yao (Zhejiang University); Yunchong Wang (Zhejiang University)*; Xue-fei Qin (Zhejiang University); Fengyuan Yu (Zhejiang University); Dan Shi (Zhejiang University); Jian-xin Shen (Zhejiang University)	**ID:199 The Effect of Temperature Changes on Semiconductor Material Efficiency Under Load** Macit Aydin (Inform Elektronik)*; Fatih Tuztasi (Inform Elektronik); Macit Aydin (Inform Elektronik)
14:50-15:00 BREAK	BREAK	BREAK

SEPTEMBER 21, 2022 – WEDNESDAY

	PARALLEL PRESENTATIONS		
	Date: 21 SEPTEMBER 2022		
	PARALLEL SESSION A	**PARALLEL SESSION B**	**PARALLEL SESSION C**
SESSION 16 CHAIRS: Jizhe Wang, Kazuhiro Kajiwara		**SESSION 17** CHAIRS: Taka Kanayama, Abdulrahman Ibrahim AlKassem	**SESSION 18** CHAIRS: Daniel Icaza, Yuichiro Shibata
15:00-15:20	**ID:201 Mathematical Modeling for Matching the Prosumers in Decentralized Energy Trading System** Priyansha Sharma (Kiit University)*; Rudranarayan Senapati (Kalinga Institute of Industrial Technology, Deemed To Be University); Aleena Swetapadma (Kalinga Institute of Industrial Technology)	**ID:212 Parameter Estimation of Photovoltaic System Using Marine Predators Optimization Algorithm-Based Multilayer Perceptron** Medine Colak (Gazi University)*; Selami Balci (Karamanoglu Mehmetbey University)	**ID:218 Multi-Physics and Artificial Intelligence Models for Digital Twin Implementations of Residential Electric Loads** Steven Poore (University of Kentucky)*; Rosemary E. Alden (University of Kentucky); Huangjie Gong (Abb Us Research Center); Dan M. Ionel (University of Kentucky)
15:20-15:40	**ID:202 Harmonic Analysis Of A Grid-Connected Solar Power Plant In Batman Province And Investigation Of Power Quality** Ebru Apaydin (Batman University)*; Mehmet Rida Tur (Batman University); Naci Obut (Batman University); Raci Nar (Batman University); Rojin Temiz (Batman University); Narin Mirkan (Batman University)	**ID:213 Optimal Scheduling of Aggregated Electric Vehicle Charging with a Smart Coordination Approach** Murat Akil (Aksaray University)*; Emrah Dokur (Bilecik S.e. University); Ramazan Bayindir (Gazi University)	**ID:219 Direct-Drive Wind Generator Concept with Non-Rare-Earth PM Flux Intensifying Stator and Reluctance Outer Rotor** Ali Mohammadi (University of Kentucky)*; Oluwaseun Badewa (University of Kentucky); Yaser Chulaee (University of Kentucky); Dan M. Ionel (University of Kentucky); Somasundaram Essakiappan (Qm Power Inc.); Madhav Manjrekar (Qm Power Inc.)
15:40-16:00	**ID:13 Evaluation of costs and energy consumption of the simultaneous removal of nitrates and fluorides by continuous electrocoagulation** Hanane Tounsi (Crtse)*	**ID:214 An Experimental Study for Load Matching in Wireless Power Transfer System using Class-E Inverter and Capacitor Array** Fatih Issi (Cankiri Karatekin University)*; Orhan Kaplan (Gazi University)	**ID:221 High-Performance Power Maximization Based Wind Energy Conversion System Using Super Twisting Sliding Mode Approach** Ilhami Colak (Nisantasi University)*; Mounira Ali (Mounira); Ilhan Garip (Nisantasi Univ)
16:00-16:20	**ID:206 Half-bridge Power Device Embedded Module with Low Parasitic Inductance** Jizhe Wang (Nagasaki Institute of Applied Science)*; Kazuhiro Kajiwara (Nagasaki Institute of Applied Science); Taka Kanayama (Fukuoka University); Yuji Ohta (Isahaya Electronics Corporation); Nobumasa Matsui (Nagasaki Institute of Applied Science); Tadashi Suetsugu (Fukuoka University); Fujio Kurokawa (Nagasaki Institute of Applied Science)	**ID:215 Reliability Analysis of Centralized and Decentralized Controls of Microgrid** Selahattin Garip (Gazi); Melih Bilgen (Gazi); Necmi Altin (Gazi University)*; Saban Ozdemir (Gazi University); Ibrahim Sefa (Gazi University)	**ID:222 Investigating the Energy Production Trends of Countries and Its Relationship Between Economic Complexity** Batuhan Hangun (Independent Researcher)*; Onder Eyecioglu (Bolu Izzet Baysal University); Murat Beken (Bolu Abant Izzet Baysal University)
16:20-16:40	**ID:207 Four-Way Reconfigurable Repeater with U-Slot Microstrip Antennas for Outdoor IoT Applications** Asena Melike Cayan (Nevsehir Haci Bektas Veli University); Suad Basbug (Nevsehir Haci Bektas Veli University)*	**ID:216 Optimal sizing of photovoltaic systems for smart buildings. Case study "Cañar Gubernation Building".** Jaime Rojas (Catholic University of Cuenca, Cuenca, Ecuador); Daniel Icaza (Catholic University of Cuenca, Cuenca, Ecuador)*; Pablo Chacho (Catholic University of Cuenca, Cuenca, Ecuador)	**ID:223 Electricity Consumption Forecast using Machine Learning Regression Models in Turkey** Umit Senturk (Bolu Abant Izzet Baysal University)*; Murat Beken (Nisantasi University); Onder Eyecioglu (Bolu Izzet Baysal University)
16:40-17:00	**ID:209 Improvement of Modelling for an Optimal Facility Design Using Renewable Energy in a Clinic** Yuji Mizuno (Osaka Electro-communication University)*; Masaharu Tanaka (Nagasaki Institute of Applied Science); Yoshito Tanaka (Nagasaki Institute of Applied Science); Fujio Kurokawa (Nagasaki Institute of Applied Science); Nobumasa Matsui (Nagasaki Institute of Applied Science)	**ID:217 Electrification of a load by a hybrid photovoltaic-wind system with battery storage** Abdelhakim Belkaid (Bordj Bou Arreridj University)*; Chafiaa Serir (University of Bejaia); Katia Tadjine (University of Bejaia); Djamila Rekioua (University of Bejaia); Samia Bensmail (Bouira Universty); Slimane Hadji (Bejaia University); Ilhami Colak (Nisantasi University)	**ID:224 Estimating the Effect of Renewable Energy Policies on the Republic of Turkey's Gross National Product by using Artificial Intelligence** Murat Beken (Bolu Abant Izzet Baysal University)*; Nursac Kurt (Istinye University); Onder Eyecioglu (Bolu Izzet Baysal University)
17:00-17:20	**ID:225 Utilizing Machine Learning to Predict Offshore Wind Farm Power Output for European Countries** Oktay Ozturk (wichita State University)*; Batuhan Hangun (independent Researcher); Maryam Shoaeinaeini (wichita State University)		
17:20-17:40	**CLOSING CEREMONY**		

Presentation Instruction for ICRERA 2022 Presenters

Virtual & Oral presentation

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