

**14<sup>th</sup> INTERNATIONAL CONFERENCE on SMART GRID  
(icSmartGrid2026)**



**Suceava/Romania**

**July 6-9, 2026**

**icSmartGrid2026**

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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 **icSmartGrid2026** conference is English.

# WELCOME to icSmartGrid 2026

Dear Colleague,

The purpose of the International Conference on Smart Grid (icSmartGrid 2026) 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.

Following the success of the first and second editions of the Smart Grid Workshops, organized on behalf of the European Commission Joint Research Centre in Antalya on September 18–20, 2013, and September 23–25, 2014, respectively, the third edition in Istanbul on February 22, 2015, the fourth edition in Istanbul on April 28, 2015, the fifth edition in Istanbul on March 21–25, 2016, the sixth edition in Nagasaki, Japan, on December 4–6, 2018, the seventh edition in Newcastle, Australia, on December 9–11, 2019, the eighth edition in Paris, France, in 2020, the ninth edition in Setúbal, Portugal, in 2021, the tenth edition in Istanbul, Türkiye, in 2022, the eleventh edition in Paris, France, in 2023, the twelfth edition in Setúbal, Portugal, in 2024, and the thirteenth edition in Glasgow, United Kingdom, in 2025, we are now organizing the fourteenth International Conference on Smart Grid in Suceava, Romania, in 2026, with the technical co-sponsorship of IEEE IES and IAS.

icSmartGrid will continue to promote and disseminate knowledge on several topics and technologies related to smart energy systems and energy sources. It is therefore aimed at assisting researchers, scientists, manufacturers, companies, communities, agencies, associations, and societies in keeping abreast of new developments in their specialist fields and uniting in the search for alternative energy solutions to current issues such as the greenhouse effect, sustainability, and clean energy challenges.

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



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# KEYNOTE SPEAKERS

**Keynote 1: Mr. Makoto YOSHIMURA, Deputy Vice President & Technology Executive, TMEIC, Japan**

**Date : July 07, 2026 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.

## **Power Electronics Technology to Realize the Carbon Neutral Society**

**Summary:** At the end of April, the International Energy Agency (IEA) reported on a High-Level Energy Transition Dialogue for COP31 held in Paris. The dialogue addressed the expansion of renewable energy and the improvement of energy efficiency as some of the measures to address current energy challenges arising from geopolitical tensions, as well as the practical implementation of the transition to carbon neutrality. Considering such a global trend, this presentation focuses on power electronics technology, highlighting its essential role in solutions for achieving carbon neutrality. TMEIC continues to develop power electronics technology under the concept of "PEiE: Power Electronics in Everything." This presentation introduces the latest development activities aimed at realizing a Carbon Neutral Society, showing topics applied to large-scale industries. The first topic is high-capacity Power Electronics technology for expanding Renewable Energy. Renewable Energy is going to become a primary source of electric power generation, replacing fossil-fueled generation. Energy storage systems will also play important roles in the future energy networks. Power Electronics technology provides grid-forming functions for renewable energy and energy storage systems. Power Electronics also contributes to power transmission from remote Renewable Energy. The second topic addresses Green Hydrogen. In fossil-fuel-dependent and hard-to-electrify sectors, switching to clean fuels, including Green Hydrogen, is essential. The mass production of Green Hydrogen requires highcapacity Power Electronics technology compatible with future power networks. This presentation introduces recent applications of Power Electronics in development projects in Japan. The third topic addresses digital networks for information and communication. The digital networks will play a key role in dynamically managing and operating the future energy networks. Today, another major trend is the rapid growth of AI, which requires large data centers and high and variable power consumption. This presentation notes that these digital networks require large scale secure electric power supply and power variation leveling. Power Electronics technology provides the necessary power supply solutions. The final topic introduces the Power Electronics technologies applied to industrial sectors. For achieving Carbon Neutral Society, conventional electrification solutions are often inadequate for large-scale industries. High-capacity Power Electronics technology enables electrification of facilities rated at tens of MW. The highcapacity Power Electronics also improves energy efficiency by optimally managing MW-rated systems.

## **Keynote 2: Dr. Masaki Nakamura, NTT DOCOMO, Inc. Japan**

**Date : July 07, 2026 10.30-11.00 AM**



Masaki Nakamura received his M.E. degree from Tokyo Institute of Technology in 2012. In the same year, he joined NTT DOCOMO Advanced Technology Research Laboratories, where he has been engaged in research on power control technologies for wireless base stations. Since 2017, he has participated in a national project led by the Ministry of Economy, Trade and Industry (METI), focusing on Virtual Power Plant (VPP) and Demand Response (DR) demonstration. Through this project, he contributed to the development and early practical implementation of demand response technologies utilizing wireless base stations, achieving world-leading results. His research achievements include numerous technical papers presented at

academic societies and contributions recognized by public institutions. He is the lead inventor of many patents related to energy and communication technologies. He entered the doctoral program at Kyushu University in 2018 and received his Ph.D. degree in 2021. Currently, he serves as a visiting professor at Nagasaki Institute of Applied Science, as well as a committee member of the Institute of Electrical Engineers of Japan (IEEJ) and a specialist committee member of the Institute of Electronics, Information and Communication Engineers (IEICE). He is also involved in national initiatives such as the Ministry of Internal Affairs and Communications' "Beyond 5G Next Generation Leaders" program (2024) and a technical expert for NEDO's Post-5G Information and Communication Systems project.

### **Green Transformation of Telecommunications Power Systems and VPP/DR Initiatives**

**Summary:** Reducing greenhouse gas emissions, including CO<sub>2</sub>, is one of the most critical global challenges. In parallel, the rapid growth of ICT services has significantly increased electricity consumption, leading to a strong demand for energy-efficient technologies in communication infrastructures. In NTT DOCOMO, approximately 70% of total electricity consumption is attributed to nationwide mobile base stations. To address this issue, "green base stations" have been developed by introducing renewable energy sources such as solar panels along with large-capacity battery systems. These systems supply power to radio equipment, while surplus solar energy is stored in lithium-ion batteries for efficient utilization. In recent years, the need for enhancing resilience against increasingly severe natural disasters and stabilizing the power supply-demand balance has become more important. In base stations, backup battery systems are installed to ensure continuous operation during power outages, and upgrading these systems from conventional lead-acid batteries to lithium-ion batteries is being considered. Furthermore, battery utilization plays a crucial role in peak load reduction by storing energy during low-demand periods and discharging it during peak demand, thereby reducing the burden on the power grid. In addition, solar power generation, which aligns with daytime peak demand, contributes further to peak shaving. This presentation introduces technologies for applying renewable energy to mobile base stations, as well as control methods for charge and discharge of backup battery systems, aiming at achieving both energy efficiency and power system stability.

**Keynote 3: Professor Radu-Daniel Vatavu, Stefan cel Mare University of Suceava, Romania**

**Date : July 07, 2026 11.20-12.20 AM**



Radu-Daniel Vatavu is a Professor of Computer Science at the Stefan cel Mare University of Suceava and an elected Corresponding Member of the Romanian Academy. He conducts research in Human-Computer Interaction, Augmented/Mixed/Extended Reality, Ambient Intelligence, and Accessible Computing, and his work primarily focuses on natural interaction with computing systems, ranging from mobile and wearable devices to large displays and extended reality environments. Prof. Vatavu leads the Machine Intelligence and Information Visualization Laboratory, an interdisciplinary research laboratory dedicated to advancing knowledge in natural, meaningful, and accessible interactions among humans, computers, and environments. Recent applications include smart and sustainable buildings within the transition toward net-zero smart cities. Prof. Vatavu's research has received multiple awards, including at CHI, EICS, ICMI, IMX, and W4A.

**Realizing Ubiquitous Computing and Augmented Reality through Sustainable Smart Grids**

**Summary:** For many decades, visions of ubiquitous computing and augmented reality have imagined worlds in which computation is deeply embedded into physical environments and digital information becomes readily available as an integral part of everyday experience. The realization of these visions depends on the development of reliable, interoperable, and economically sustainable energy infrastructures. Today, the convergence of smart grid and computing is evident in digital twins, pervasive sensing, and cloud and edge-based systems that enable novel physical-digital interactions in everyday life. As we move closer to realizing these visions, from research laboratories to buildings, cities, and world scale, their success becomes inherently linked to the capabilities of next-generation smart grids. In this talk, I will present human and computational requirements for emerging applications in smart buildings, enhanced perception and cognition, and immersive collaboration. I will invite the audience to reflect on how future physical-digital systems can be designed around efficient, resilient, and sustainable netzero energy management.

**Keynote 4: Professor Gheorghe Grigoras, Gheorghe Asachi Technical University of Iasi, Romania**

**Date : July 08, 2026 10.00-11.00 AM**



Gheorghe Grigoras is a Full Professor and Director of Council for Doctoral University Studies at the “Gheorghe Asachi” Technical University of Iasi, Faculty of Electrical Engineering, Energetics and Applied Informatics, Romania. He is a PhD supervisor in the doctoral field of Power Engineering with 8 doctoral students in internship. He is the Head of the Research Laboratory “Availability of Energy Systems Supplied from Renewable Sources”, Electrical Engineering Faculty, Power System Department, “Gheorghe Asachi” Technical University of Iasi. His research has resulted in 17 books, 15 book chapters, and more than 300 articles, coordination of 3 national research projects, participation as a key person in another 5, a team member in 14 research contracts with industrial partners, and 2 patent applications, having as the research topic applications of Artificial Intelligence techniques in various research areas regarding the control and supervisory of the power systems (load modelling, power quality, increasing the energy efficiency in the electric networks, optimal integration of renewable energy sources in the electrical networks, smart grids). He is a Topic Editor for two journals indexed by WoS (Mathematics - ISSN: 2227-7390 and Applied Sciences – ISSN: 2076-3417). Professor Grigoras was a Guest Editor of six Special Issues for peer-reviewed journals indexed by WoS. He was a General Chair of 11 international conferences, General Co-Chair of 4 international Conference, Technical Program Chair at 3 International Conferences and a member of over 300 Technical Program Committees of the international symposia and conferences carried out in countries from Europe, Asia, North America, Australia, and Africa. He is on the Advisory Board of the American Society for Electrical Engineering. Also, he is a member of the International Association of Engineers and the World Academy of Science, Engineering, and Technology.

**Clustering-Driven Decision-Making in the Transition Process to Next-Generation Electric Distribution Grids**

**Summary:** In recent times, the evolution of electrical networks has increasingly focused on integrating innovative technologies to ensure the rapid adoption of the "smart grids" concept. These provide a strong link between digital technology and classic technical infrastructure, facilitating an efficient, reliable and sustainable electricity distribution process between distributed generation sources and end users. The foundation of these networks is an integrated energy ecosystem that ensures a secure, economically efficient, and environmentally sustainable supply. Decision support systems provide smart solutions based on data analysis, scenario modelling and resource optimisation. There is growing interest in integrating Artificial Intelligence techniques into these systems, which can significantly improve decision-making. These include supervised learning algorithms for energy demand forecasting, unsupervised learning (clustering) to identify critical network areas with energy losses or voltage-level problems, fuzzy logic for uncertainty management, and expert systems for decision-making based on heuristic rules. In particular, the application of Explainable Artificial Intelligence is becoming essential for increasing the transparency of automated decisions and facilitating their adoption in practice. The presentation will address the above indicated aspects, also with exemplificative results taken from the projects finished or currently in progress regarding the impact of clustering-based decision-making on the transition process to the next generation of electric distribution networks.

# TUTORIALS

**Speaker 1: Assoc. Prof. Dr. Korhan Kayisli, Gazi University, Turkiye**

**Date : July 06, 2026 12.00-13.00**



Dr. Korhan Kayisli is a researcher and faculty member at Gazi University. His research interests include power electronics, smart grid systems, renewable energy systems, intelligent control, and artificial intelligence applications in energy systems. He has authored numerous scientific publications in international journals and conferences in the areas of power electronics, smart grids, renewable energy systems, and intelligent energy management. His research focuses on power converter control, energy management, optimization, and AI-supported energy applications. Dr. Kayisli is an IEEE Senior Member and actively contributes to the academic community through research, editorial, and conference activities. He serves on the editorial boards of several international journals and has held organizing, technical committee, and program committee positions in many international conferences. His recent work focuses on intelligent energy systems, advanced power electronic applications, and AI-enhanced control methods for next-generation smart grid systems.

## **Intelligent and AI-Enhanced Control of Power Electronic Converters for Smart Grid Applications**

**Summary:** Modern smart grid systems heavily rely on power electronic converters for energy conversion, power flow control, and grid integration. These converters are widely used in renewable energy, battery storage, electric vehicle, and distributed generation applications. Power electronic converters such as DC-DC converters, grid-connected inverters, and bidirectional converters operate under nonlinear and uncertain conditions. Load variations, renewable energy fluctuations, parameter uncertainties, and grid disturbances create major challenges for controller design and system operation. Conventional control methods such as PI and PID controllers are still widely used due to their simple structure and practical implementation. However, these methods often exhibit limited performance under uncertain operating conditions, fast disturbances, and strong nonlinearities. For this reason, advanced control methods have attracted considerable attention in power electronics and smart grid applications. Approaches such as model predictive control, adaptive control, robust control, nonlinear control, and sliding mode control have been widely investigated to improve dynamic performance, disturbance rejection, and system robustness. Among these methods, sliding mode control and higher-order approaches such as super-twisting sliding mode control offer strong robustness against disturbances and model uncertainties. Intelligent control methods provide additional flexibility for converter systems operating under nonlinear and uncertain conditions. Fuzzy logic control has been widely applied in power electronics because of its ability to handle uncertainty and system nonlinearities without requiring highly accurate mathematical models. In addition to conventional fuzzy systems, Type-2 and Type-3 fuzzy approaches, neuro-fuzzy systems, and hybrid intelligent controllers offer improved adaptability and control performance in complex operating environments. AI-enhanced approaches have opened new directions in converter control and energy management. AI methods are increasingly used to support controller tuning, predictive analysis, fault diagnosis, predictive maintenance, and system optimization. Machine learning, reinforcement learning, digital twin technologies, and data-driven optimization methods provide new opportunities for adaptive and autonomous converter operation. This tutorial presents advanced, intelligent, and AI-enhanced control methods for power electronic converters used in smart grid applications. The tutorial begins with converter fundamentals and control challenges in renewable energy systems, battery energy storage systems, electric vehicles, and microgrids. The tutorial then covers classical and advanced control methods, including PI/PID control, model predictive control, adaptive control, robust control, nonlinear control, and sliding mode control. Intelligent control methods, including fuzzy logic, Type-2 fuzzy systems, Type-3 fuzzy systems, and hybrid control structures, are also discussed. The final part focuses on AI-enhanced methods for converter control and system monitoring. Topics include machine learning-assisted optimization, reinforcement learning-based control, fault diagnosis, predictive analytics, and digital twin-supported monitoring. Practical examples from photovoltaic systems, battery energy storage systems, EV charging systems, and smart microgrids are included throughout the tutorial. This tutorial is intended for researchers, graduate students, engineers, and industry professionals working in smart grid systems, renewable energy systems, power electronics, and intelligent control applications. The tutorial aims to provide both theoretical background and practical insight into modern converter control methods for next-generation energy systems.

**Speaker 2: Prof. Dr. Stanimir Stoyanov Valtchev, NOVA School of Science and Technology, Universidade NOVA de Lisboa, Portugal**

**Date : July 06, 2026 13.10-14.10**



Stanimir Stoyanov Valtchev is a Professor (Professor Jubilado / Emeritus) in the Department of Electrical and Computer Engineering at the NOVA School of Science and Technology (Faculdade de Ciencias e Tecnologia), Universidade NOVA de Lisboa, Portugal, where his disciplinary area is Energy. His research interests include power electronics, energy harvesting from the environment, renewable energies, wireless energy transfer, and medical equipment. His representative publications include work on super-resonant converters and resonant power conversion published in IEEE journals.

**Environmentally Friendly Storage for a Sustainable Smart Grid?**

**Summary:** Engineers who work already years in the development of Renewable Energy Equipment know that the price of kWh is going gradually down and can reach very low levels. The problem of the new type of power grid we are going into is unfortunately more complex:

The global energy system is to be regarded as a whole, not just the low price of renewable energy. In Portugal (and Spain) the renewable energy has shown in 2025 how fragile is the whole system. The environment we have now is to be understood, no matter if it is human society's fault or not, but to make no precipitated decisions. The environment is getting gradually worse as a place to live in, but the human population should not be forced to suffer. The renewables were announced as the only solution by Al Gore and Greta Tunberg but are renewable energies THE solution for electricity production that will save humanity? Should we put ALL public subsidies on randomly intermittent renewable energies? Is it visionary or ideological choice (again)? What is more, the highly haphazard and low portions of renewable energy require STORAGE. The result was the Smart Grid, in order to stabilize the Desigual small producers with huge consumers, quite displaced in time. Is this combination Sustainable? Quite unlikely, also because the human beings and human societies still want to live (longer and healthy, all of them...)

How to proceed, if we still want to continue with renewables, even though the impression of an ideology surrounding the "Energieverwendung" i.e. "Energy Transition"???

Based on the available problems and solutions, the choice is very limited:

First choice is: High power, hundreds of MW and MWh: hydropower being renewable but not friendly to human beings and nature (drinkable water). Or, nuclear, not welcomed by many??

Second choice (maybe the only one): Energy Storage.

A.Lowest power, a few kW and kWh: batteries, highly polluting, short life. Fuel cells, with similar problems.

B.Middle power: small nuclear reactors... not much different from the biggest brothers. Hydrogen power can be the solution, if it were not so expensive...

The Hydrogen is claimed as a common future of the grid. Is it? It is necessary to analyze the future possibilities!

**Speaker 3: Prof. Dr. Erdal Bekiroglu, Gazi University, Türkiye**

**Date : July 06, 2026 14.20-15.20**



Prof. Dr. Erdal Bekiroglu completed his undergraduate studies in Electrical Education at Gazi University in 1994 and received his M.Sc. and Ph.D. degrees from the Institute of Science and Technology, Gazi University, in 1998 and 2004, respectively. He served as a Research Assistant at Gazi University between 1996 and 2003. From 2004 to 2024, he worked as an Assistant Professor, Associate Professor, and Professor in the Department of Electrical and Electronics Engineering, Faculty of Engineering, Bolu Abant Izzet Baysal University. In February 2024, he joined Gazi University, initially with the Faculty of Engineering, Department of Software Engineering. He is currently a Professor at the Faculty of Technology, Department of Electrical and Electronics

Engineering, Gazi University. His research interests include computer-controlled systems, electrical machine drives and control, smart grids, renewable energy systems, and artificial intelligence. He has served as Program Chair for the International Conference on Renewable Energy Research and Applications (ICRERA) and the International Conference on Smart Grid (icSmartGrid). He is a member of the Editorial Board of the International Journal of Smart Grid. Prof. Dr. Bekiroglu has published numerous journal and conference papers in his research areas. His key qualifications include expertise in vocational and technical education, the design and management of scientific projects, and academic leadership. He has also served as Head of the Department of Electrical and Electronics Engineering and as Secretary General of Bolu Abant Izzet Baysal University.

**AI for Smart Grids: From Machine Learning to Edge Intelligence**

**Summary:** The rapid integration of renewable energy resources, distributed energy systems, electric vehicles, and intelligent sensing technologies has significantly increased the complexity of modern power systems. Traditional monitoring, control, and decision-making approaches are no longer sufficient to address the challenges posed by highly dynamic and data-intensive smart grid environments. Artificial Intelligence (AI) has emerged as a key enabling technology for improving the reliability, efficiency, resilience, and sustainability of next-generation power systems. This tutorial provides a comprehensive theoretical overview of AI technologies applied to smart grids, covering the evolution from conventional Machine Learning techniques to modern Edge Intelligence paradigms. It introduces the fundamental concepts of Artificial Intelligence, including Machine Learning, Deep Learning, and Reinforcement Learning, and examines their roles in addressing key challenges in modern power systems. Major application areas such as load forecasting, renewable energy prediction, fault detection, predictive maintenance, power quality assessment, and intelligent energy management are presented through representative examples. The transition from cloud-centric AI architectures to edge-based intelligent systems is also discussed, highlighting the advantages of Edge AI and TinyML for real-time, low-latency, energy-efficient, and privacy-preserving smart grid applications. In addition, emerging research topics, including Explainable AI (XAI), Federated Learning, Digital Twins, Graph Neural Networks, and Foundation Models, are introduced to provide participants with insights into future developments in intelligent power systems. Participants will gain a broad understanding of the current AI landscape in smart grids, its practical applications, and the technological trends that are expected to shape the next generation of autonomous, resilient, and data-driven energy systems.

**Speaker 4: Prof. Dr. Erdal Irmak, Gazi University, Türkiye**

**Date : July 06, 2026 15.30-16.30**



Prof. Dr. Erdal Irmak, IEEE Senior Member, is a Professor of Electrical Engineering at Gazi University, Türkiye. His research interests include power system operation and control, renewable energy integration, smart grids, microgrids, energy storage systems, and the cybersecurity of critical infrastructures. He has authored more than 160 scientific publications, most of which are indexed in the Web of Science, and has led or participated in numerous national and international research and industrial projects. His recent work focuses on smart grid control, distributed energy resources, digital twin technologies, real-time energy management, and advanced power quality monitoring systems. Prof.

Irmak serves as Editor or Associate Editor for several international journals and has held key organizational and technical roles in numerous IEEE-sponsored conferences. He currently serves as Head of the Smart Grids Graduate Program at Gazi University and teaches undergraduate and graduate courses in Electric Power Systems, Smart Grids, and Electrical Energy Distribution.

### **Towards a Sustainable and Intelligent Energy Future**

**Summary:** The ongoing transformation of electric power systems is driven by the increasing integration of renewable energy resources, the proliferation of distributed energy technologies, and the rapid advancement of digitalization. This tutorial presents a comprehensive overview of emerging trends and enabling technologies shaping the future energy landscape, including smart grids, microgrids, energy storage systems, artificial intelligence, Internet of Things (IoT), big data analytics, blockchain, and digital twin technologies. The tutorial discusses their roles in enhancing grid reliability, operational efficiency, flexibility, and sustainability while facilitating the large-scale integration of renewable energy sources. Furthermore, key technical, economic, regulatory, and cybersecurity challenges associated with the modernization of power systems are examined. The tutorial aims to provide researchers, engineers, and industry professionals with a holistic perspective on the technological developments and strategic directions that are defining the next generation of sustainable and intelligent energy systems.

**Speaker 5: Recep Ozbay, Gazi University, Türkiye**

**Asst. Prof. Dr. Uraz Yavanoglu, Gazi University, Türkiye**

**Date : July 06, 2026 16.40-17.40**



Recep Ozbay received the B.Sc. degree in electrical and electronics engineering and the B.Sc. degree in business administration from Anadolu University, Eskişehir, Türkiye, in 2012 and 2013, respectively, and the M.Sc. degree in internet and information technology management from Afyon Kocatepe University, Afyon, Türkiye, in 2016. He is currently pursuing the Ph.D. degree in forensic sciences at Gazi University, Ankara, Türkiye. From 2012 to 2016, he was a Cybersecurity Researcher at the TÜBİTAK BİLGEM Cyber Security Institute, where he contributed to more than 30 projects for government and defense organizations and served as an instructor in licensed penetration testing and cybersecurity training programs. Since 2021, he has

been a Freelance Security Researcher, focusing on AI-driven cybersecurity, open-source intelligence (OSINT) methodologies, and active cyber defense. His current research interests include large language models for cyber threat intelligence, adversarial defense strategies, and forensic applications of artificial intelligence.



Uraz Yavanoglu received the bachelor's degree in computer engineering from Atilim University in 2005, the master's degree in computer engineering from Gazi University, Türkiye, in 2009, and the Ph.D. degree in 2014. His main research fields are computer engineering and its applications in data security, large language models, machine learning, big data, and image processing. He has been an Assistant Professor with the Department of Computer Engineering, Faculty of Engineering, Gazi University, since 2014.

### **Smart Grid Security: Cyber Threat Intelligence Approach**

**Summary:** Smart grids represent one of the most critical cyber-physical infrastructures in modern society, combining power generation, transmission, distribution, advanced metering infrastructure, SCADA systems, industrial control systems, and digital communication networks into highly interconnected operational environments. While this integration improves efficiency, reliability, and real-time monitoring, it also expands the cyber attack surface of energy infrastructures and exposes them to increasingly sophisticated adversarial campaigns. In this context, cyber threat intelligence (CTI) offers a proactive approach for identifying threats, understanding adversary behavior, and strengthening smart grid security. This training session examines smart grid security through a CTI-driven perspective across three dimensions. First, we establish the foundational asymmetry between IT and OT security models, emphasizing the safety, availability, latency, legacy system, and physical-impact constraints that shape smart grid defense. We survey the evolution of cyber threats targeting energy and industrial infrastructures, from Stuxnet and BlackEnergy to Industroyer, ransomware operations, supply-chain compromises, and recent state-sponsored activity against critical infrastructure, while mapping observed behaviors against the MITRE ATT&CK for ICS framework. Second, we analyze how CTI can support smart grid protection through the collection, enrichment, correlation, and operationalization of intelligence from vulnerability databases, malware reports, incident disclosures, sectoral advisories, STIX/TAXII feeds, and information-sharing communities. Particular attention is given to extracting indicators of compromise, tactics, techniques, and procedures, targeted assets, attacker objectives, and potential operational impacts on substations, smart meters, SCADA components, remote terminal units, and grid communication networks. These intelligence outputs are examined in relation to risk assessment, detection engineering, threat hunting, incident response, and strategic decision-making. Third, we consider the emerging role of large language models in smart grid CTI workflows. LLMs can assist analysts through automated TTP extraction from unstructured reports, multilingual intelligence processing, correlation of heterogeneous threat data, and retrieval-augmented generation architectures grounded in trusted CTI sources. At the same time, we critically address their limitations and adversarial implications, including hallucination, weak explainability, prompt injection, data poisoning, and the use of generative AI to scale reconnaissance, spearphishing, and social engineering against energy-sector personnel. We conclude by identifying open research problems with high practical relevance: the absence of standardized benchmark datasets for smart grid CTI model evaluation, the unresolved tension between explainability requirements in safety-critical infrastructure and current LLM opacity, and the lack of mature governance and responsible disclosure norms for dual-use AI capabilities targeting energy systems. These gaps represent concrete opportunities for rigorous contribution at the intersection of smart grid security, cyber threat intelligence, operational technology defense, and AI safety.

# CONFERENCE PROGRAM SUMMARY

| Program Summary of icSmartGrid 2026, Suceava, Romania, July 06-09, 2026 |                        |  |             |                               |                           |                                               |                                               |                                               |                                                 |                                                  |                                                  |                                                 |
|-------------------------------------------------------------------------|------------------------|--|-------------|-------------------------------|---------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-------------------------------------------------|--------------------------------------------------|--------------------------------------------------|-------------------------------------------------|
|                                                                         | JULY 06, 2026 (MONDAY) |  |             | JULY 07, 2026 (TUESDAY)       | JULY 08, 2026 (WEDNESDAY) |                                               |                                               |                                               | JULY 09, 2026 (THURSDAY)                        |                                                  |                                                  |                                                 |
| 12.00-13.00                                                             | Tutorial-I ( 60 Min)   |  | 08.30-09.00 | Opening Ceremony and Speeches |                           |                                               |                                               |                                               |                                                 |                                                  |                                                  |                                                 |
|                                                                         |                        |  | 09.00-10.00 | Keynote Speech-I ( 60 Min)    | 09.00-10.00               |                                               |                                               |                                               | 09.00-11.00                                     | Online Session-O19<br>6 PAPERS<br>(6*20=120 Min) | Online Session-O20<br>6 PAPERS<br>(6*20=120 Min) |                                                 |
|                                                                         |                        |  | 10.00-10.30 | BREAK                         | 10.00-11.10               | Keynote Speech-IV ( 60 Min)                   |                                               |                                               |                                                 |                                                  |                                                  |                                                 |
| 13.10-14.10                                                             | Tutorial-II ( 60 Min)  |  | 10.30-11.00 | Keynote Speech-II ( 60 Min)   |                           |                                               |                                               |                                               |                                                 |                                                  |                                                  |                                                 |
|                                                                         |                        |  | 11.00-11.20 | MORNING COFFEE BREAK          | 11.10-11.20               | MORNING COFFEE BREAK                          |                                               |                                               | 11.00-11.20                                     | MORNING COFFEE BREAK                             |                                                  |                                                 |
| 14.20-15.20                                                             | Tutorial-III ( 60 Min) |  | 11.20-12.20 | Keynote Speech-III ( 60 Min)  | 11.20-12.40               | Online Session-7<br>4 PAPERS<br>(4*20=80 Min) | Online Session-8<br>4 PAPERS<br>(4*20=80 Min) | Online Session-9<br>4 PAPERS<br>(4*20=80 Min) | Online Session-O10<br>4 PAPERS<br>(4*20=80 Min) | 11.00-12.40                                      | Online Session-O21<br>4 PAPERS<br>(3*20=60 Min)  | Online Session-O22<br>4 PAPERS<br>(3*20=60 Min) |
|                                                                         |                        |  | 12.20-13.30 | LUNCH                         |                           |                                               |                                               |                                               |                                                 | 12.40-13.00                                      | Closing Ceremony                                 |                                                 |

# CONFERENCE PROGRAM SUMMARY

| Program Summary of icSmartGrid 2026, Suceava, Romania, July 06-09, 2026+A26:T41 |                        |  |             |                                                          |                                                     |                                                     |                                                     |                           |                                                     |                                                      |                                                      |                                                      |  |  |
|---------------------------------------------------------------------------------|------------------------|--|-------------|----------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|---------------------------|-----------------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|--|--|
|                                                                                 | JULY 06, 2026 (MONDAY) |  |             | JULY 07, 2026 (TUESDAY)                                  |                                                     |                                                     |                                                     | JULY 08, 2026 (WEDNESDAY) |                                                     |                                                      |                                                      | JULY 09, 2026 (THURSDAY)                             |  |  |
| 15.30-16.30                                                                     | Tutorial-IV ( 60 Min)  |  | 13.30-15.30 | Face to Face Session-F1<br><br>4 PAPERS<br>(4*20=80 Min) | Online Session-O1<br><br>4 PAPERS<br>(6*20=120 Min) | Online Session-O2<br><br>4 PAPERS<br>(6*20=120 Min) | Online Session-O3<br><br>4 PAPERS<br>(6*20=120 Min) | 13.30-15.30               | Online Session-11<br><br>6 PAPERS<br>(6*20=120 Min) | Online Session-O12<br><br>6 PAPERS<br>(6*20=120 Min) | Online Session-O13<br><br>6 PAPERS<br>(6*20=120 Min) | Online Session-O14<br><br>6 PAPERS<br>(6*20=120 Min) |  |  |
|                                                                                 |                        |  |             |                                                          |                                                     |                                                     |                                                     |                           |                                                     |                                                      |                                                      |                                                      |  |  |
| 16.30-17.30                                                                     | Tutorial-V ( 60 Min)   |  | 15.30-15.40 | AFTERNOON COFFEE BREAK                                   |                                                     |                                                     |                                                     | 15.30-15.40               | BREAK                                               |                                                      |                                                      |                                                      |  |  |
|                                                                                 |                        |  | 15.40-17.20 | Face to Face Session-F2<br><br>4 PAPERS<br>(4*20=80 Min) | Online Session-O4<br><br>6 PAPERS<br>(6*20=120 Min) | Online Session-O5<br><br>6 PAPERS<br>(6*20=120 Min) | Online Session-O6<br><br>6 PAPERS<br>(6*20=120 Min) | 15.40-17.40               | Online Session-O15<br><br>4 PAPERS<br>(4*20=80 Min) | Online Session-O16<br><br>4 PAPERS<br>(4*20=80 Min)  | Online Session-O17<br><br>4 PAPERS<br>(4*20=80 Min)  | Online Session-O18<br><br>4 PAPERS<br>(4*20=80 Min)  |  |  |
|                                                                                 |                        |  | 18.00-20.00 | Welcome Party                                            |                                                     |                                                     |                                                     | 18.00-20.00               | 40-18.30                                            |                                                      |                                                      |                                                      |  |  |

# CONFERENCE PROGRAM

Date: 06 JULY 2026

## TUTORIAL

12.00-13.00

Speaker:  
Dr. Korhan Kayisli  
Gazi University, Türkiye

Chairs: Onder EYECIOGLU, Orhan KAPLAN

## TUTORIAL

13.10-14.10

Speaker:  
Prof. Dr. Stanimir Stoyanov Valtchev  
Universidade NOVA de Lisboa, Portugal

Chairs: Onder EYECIOGLU, Orhan KAPLAN

## TUTORIAL

14.20-15.20

Speaker:  
Professor Erdal Bekiroglu  
Gazi University, Türkiye

Chairs: Onder EYECIOGLU, Orhan KAPLAN

## TUTORIAL

15.30-16.30

Speaker:  
Professor Erdal Irmak  
Gazi University, Türkiye

Chairs: Onder EYECIOGLU, Orhan KAPLAN

## TUTORIAL

16.40.17.40

Speaker:  
Dr. Recep Ozbay and Dr. Uraz Yavanoglu  
Gazi University, Türkiye

Chairs: Onder EYECIOGLU, Orhan KAPLAN

| Date: 07 JULY 2026 |                                                                                                                                                                                                                                                                                                                                                          | +A1:E13 |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Opening            |                                                                                                                                                                                                                                                                                                                                                          |         |
| 08.30-09.00        | Opening Ceremony and Speeches:<br><br>-Mr. Hidehiko Kikuchi, Chief Executive Officer, Power Systems Corporation, Japan<br><br>-Prof. Adrian Graur, General Chair, icSmartGrid 2026<br>-Prof. Fujio Kurokawa, General Co-Chair, icSmartGrid 2026<br>-Prof. Ilhami Colak, General Co-Chair, icSmartGrid 2026<br><br>Chairs: Mihai CERNAT, Ramazan BAYINDIR |         |
| KEYNOTE-I          |                                                                                                                                                                                                                                                                                                                                                          |         |
| 09.00-10.00        | Speaker:<br>Mr. Makoto Yoshimura<br>TMEIC, Japan<br><br>Chairs: Fujio KUROKAWA, Halil Ibrahim BULBUL                                                                                                                                                                                                                                                     |         |
| 10.00-10.10        | BREAK                                                                                                                                                                                                                                                                                                                                                    |         |
| KEYNOTE-II         |                                                                                                                                                                                                                                                                                                                                                          |         |
| 10.10-10.40        | Speaker:<br>Mr. Masaki Nakamura<br>NTT Docomo, Japan<br><br>Chairs: Fujio KUROKAWA, Halil Ibrahim BULBUL                                                                                                                                                                                                                                                 |         |
| 10.40-10.50        | COFFEE BREAK                                                                                                                                                                                                                                                                                                                                             |         |
| KEYNOTE-III        |                                                                                                                                                                                                                                                                                                                                                          |         |
| 10.50-11.50        | Speaker:<br>Professor Gheorghe Grigoras<br>Gheorghe Asachi Technical University of Iasi, Romania<br><br>Chairs: Ramazan BAYINDIR, Junliang XIAO                                                                                                                                                                                                          |         |
| 11.50-12.50        | LUNCH                                                                                                                                                                                                                                                                                                                                                    |         |

| Date: 07 JULY 2026 |                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                            |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | FACE TO FACE PRESENTATIONS                                                                                                                                                                                                                                                                                      | ONLINE PRESENTATIONS                                                                                                                                                                                                         | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                       | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                       |
|                    | <b>SESSION F1</b><br><b>CHAIRS:</b> Joyce ASSAF, Korhan KAYISLI                                                                                                                                                                                                                                                 | <b>SESSION O1</b><br><b>CHAIRS:</b> Vitor PIRES, Onder EYECIOGLU                                                                                                                                                             | <b>SESSION O2</b><br><b>CHAIRS:</b> Stanimir Stoyanov Valtchev, Erdal BEKIROGLU                                                                                                                                                                                            | <b>SESSION O3</b><br><b>CHAIRS:</b> Halil Ibrahim BULBUL, Erdal IRMAK                                                                                                                                                                                                      |
| 13.30-13.50        | <b>ID:57 YOLOv8n-Based End-to-End Solar Panel Inspection: Detection and Multi-Class Classification with SVM Comparison</b><br>Yakup Cezayirli (Istanbul Sabahattin Zaim)*; Fella Berrimi (Setif University, Algeria)                                                                                            | <b>ID:12 Demand Side Management in Micro Grids Integration</b><br>Dr. Moses Kabeyi (Durban University of Technology)*                                                                                                        | <b>ID:5 Adaptive Load Forecasting for Climate-Resilient Smart Grids: A Deep Learning Approach Leveraging AMI-Derived Behavioral Insights</b><br>Muhammad Shahzad (Institute of Management Sciences   Peshawar)*; Awais Adnan (Institute of Management Sciences   Peshawar) | <b>ID:250 Smart Grid Key Products Core Services, Main Functionalities and Key Capabilities</b><br>Dr. Moses Kabeyi (Durban University of Technology)*                                                                                                                      |
| 13.50-14.10        | <b>ID:122 European Energy Transition: A Comparative Analysis of Renewable Energy, Electricity Consumption, Emissions, and Energy Dependence in Romania and the European Union</b><br>Eugen Iavorschi (University "Stefan cel Mare" of Suceava)*; Dan Laurentiu Milici (University "Stefan cel Mare" of Suceava) | <b>ID:4 Robust Type-2 Fuzzy Sliding Mode Control for Maximum Power Point Tracking for Wind Power Conversion Systems</b><br>Belkacem Sebtli (univ batna 2)*; İlhami COLAK (ISTINYE UNIVERSITY TURKIYE)                        | <b>ID:9 Opportunities, Characteristics and Challenges of Smart Grids</b><br>Dr. Moses Kabeyi (Durban University of Technology)*; Oludolapo Olanrewaju (Durban University of Technology)                                                                                    | <b>ID:251 Spatio-Temporal Transformer Networks for Converter-Dominated Power System Intelligence</b><br>Dagupati Venkatesh (TEXAS TECH UNIVERSITY)*; Siva Naga Jammula (Worcester Polytechnic Institute); NAGA SAI KALYAN CH. (VVIT University)                            |
| 14.10-14.30        | <b>ID:272 Digital Twin for Self-Healing Management of Smart Grid Segments with HVDC Links</b><br>Вадим Жежеря (РГАУ-МСХА им. К. А. Тимирязева)*                                                                                                                                                                 | <b>ID:65 Dual-Framework Deep Learning Architectures for Electricity Consumption Forecasting Hybrid LSTM-GRU and Convolutional-Temporal Networks</b><br>PRAJEESHA Prajeesha (PES UNIVERSITY)*; Shreyas Hosur (PES University) | <b>ID:10 Smart Mobility and Role of Microgrids and Smart Grids</b><br>Dr. Moses Kabeyi (Durban University of Technology)*                                                                                                                                                  | <b>ID:252 Multi-Agent Deep Learning for Distributed Converter Coordination and Frequency Stabilization</b><br>Dagupati Venkatesh (TEXAS TECH UNIVERSITY)*; Veera Venkata Narendra, Sammanuri (TEXAS TECH UNIVERSITY)*; Siva Naga Jammula (Worcester Polytechnic Institute) |
| 14.30-14.50        | <b>ID:264 Wireless Power Transmitter for Rare-Earth-Free Wound-Field Synchronous Motors in Hydrogen UAVs</b><br>Adrian Pop (Technical University of Cluj Napoca)*; Ferencz Havadi (Technical University of Cluj Napoca); Iana Potinga (Technical University of Cluj Napoca)                                     | <b>ID:11 Policy and Legal Foundations for Distributed Generation</b><br>Dr. Moses Kabeyi (Durban University of Technology)*                                                                                                  | <b>ID:106 System-Level Energy Characterization of an Automotive PEM Fuel Cell Model Using Quasi-Steady Extraction and Local Sensitivity</b><br>Emil-Daniel Maer (TUCN)*; Daniel Fodorean (TUCN); Mircea Răceanu (ICSI); Elena Carcadea (ICSI)                              | <b>ID:253 Deep Learning-Based Cybersecurity-Enabled Fault and Attack Detection in Cyber-Physical Energy Systems: A Systematic Review</b><br>Remon Das (Western Carolina University)*                                                                                       |
| 14.50-15.10        | <b>COFFEE BREAK</b>                                                                                                                                                                                                                                                                                             | <b>BREAK</b>                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                            |

| Date: 07 JULY 2026 |                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                         |
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|                    | FACE TO FACE PRESENTATIONS                                                                                                                                                                                                                                                          | ONLINE PRESENTATIONS                                                                                                                                                                                                            | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                            | ONLINE PRESENTATIONS                                                                                                                                                                                                                    |
|                    | <b>SESSION F2</b><br><b>CHAIRS:</b> Adrian POP, Mihai CERNAT                                                                                                                                                                                                                        | <b>SESSION O4</b><br><b>CHAIRS:</b> Vitor PIRES, Onder EYECIOGLU                                                                                                                                                                | <b>SESSION O5</b><br><b>CHAIRS:</b> Stanimir Stoyanov Valtchev, Erdal BEKIROGLU                                                                                                                                                                                                 | <b>SESSION O6</b><br><b>CHAIRS:</b> Halil Ibrahim BULBUL, Erdal IRMAK                                                                                                                                                                   |
| 15.10-15.30        | <b>ID:126 Weather-Forecast-Linked Energy Management for PV-Assisted Mobile Base Stations in the Philippines</b><br>Junliang XIAO (NTT DOCOMO, INC. ); Masaki NAKAMURA (NTT DOCOMO, INC. )                                                                                           | <b>ID:112 Investigating the Impact of Humidity on the Electrical Performance of Floating Photovoltaic Systems</b><br>Ahmed Ali (University of Johannesburg)*                                                                    | <b>ID:99 Energy Efficiency Measures in Integration for The Conventional Power Systems</b><br>Dr. Moses Kabeyi (Durban University of Technology)*; Oludolapo Olanrewaju (Durban University of Technology)                                                                        | <b>ID:231 Grid-Interactive Fast EV Charging Station Based on a 12-Pulse Active Rectifier for Smart Grid Applications</b><br>Mohamad Taha ( Rafik Hariri University)*; Ali-Mustafa Almaktoof (CPUT); ANGES AMINOU MOUSSAVOU (CPUT)       |
| 15.30-15.50        | <b>ID:144 Power-Demand Driven Modeling: A Universal Data-Driven Circuit Framework for Diverse Photovoltaic Technologies</b><br>Aaron Shmaryahu (Ariel University)*; Ilan Aharon (Ariel University); Roni Elbaz (Ariel University)                                                   | <b>ID:113 Evaluating Decision Tree Regression and Light GBM Models for Short-Term Solar Irradiance Forecasting</b><br>Ahmed Ali (University of Johannesburg)*                                                                   | <b>ID:79 Electrochemical Performance Prediction in Lithium-Ion Batteries Using Physics-Informed Features and Ensemble Learning</b><br>Samarth Patel (Drexel University)*                                                                                                        | <b>ID:232 Smart Integration of Electric Vehicle Charging Infrastructure within Hybrid Renewable Microgrids</b><br>Светлана Кукарцева (студентка)*                                                                                       |
| 15.50-16.10        | <b>ID:173 Comparative Evaluation of Model-Free and Model-Based Predictive Control for a Wind-Battery DC Microgrid Supplying a Surface Water Heat Pump</b><br>Joyce Assaf (GREAH ULHN)*; Mamadou-Bailo Camara (GREAH ULHN); Damien Guilbert (GREAH ULHN); Brayima Dakyo (GREAH ULHN) | <b>ID:114 Evaluating Gradient Boosting and Random Forest Models for Short-Term Solar Irradiance Forecasting</b><br>Ahmed Ali (University of Johannesburg)*                                                                      | <b>ID:287 The Strait of Hormuz as a Critical Energy Corridor: A Technical Review of Electricity Generation, Fuel Supply, and Energy Supply Security</b><br>Mehmet Rida TUR (Batman Universitesi TBMYO Department of Electrical and Energy)*; Ramazan Bayindir (Gazi University) | <b>ID:233 Cybersecurity Challenges in Smart Grid Infrastructure: Threat Landscape, Protection Strategies, and Resilience Frameworks</b><br>Светлана Кукарцева (студентка)*                                                              |
| 16.10-16.30        | <b>ID:190 Physics-Driven Graph Attention Network for Microgrids AC-OPF Considering Distributed Generator Availability</b><br>Amirhossein Adib (Royal Holloway University of London)*; Onyema Nduka (Royal Holloway University of London)                                            | <b>ID:116 Comparative Performance Analysis of Gas and Smoke Sensors for Enhanced Safety in Student Accommodations</b><br>Ahmed Ali (University of Johannesburg)*                                                                | <b>ID:266 State of charge estimation of lithium-ion battery using an extended Kalman filter optimized by the octopus optimization algorithm</b><br>Kezban KOÇ SAVAŞ (Gazi University)* Mehmet DEMİRTAŞ (Gazi University) İpek ÇETİNBİŞ (Eskişehir Osmangazi University)         | <b>ID:255 Application of time series clustering algorithms for consumer segmentation in smart grids to optimize demand response</b><br>Olesya Oleynikova (Russian State Agrarian University - Moscow Timiryazev Agricultural Academy )* |
| 16.30-16.50        | <b>ID:286 The Effect of Renewable Energy Penetration on Supply Security Risk and Carbon Emissions: A Comparative Two-Scenario Model</b><br>Mehmet Rida TUR (Batman Universitesi TBMYO Department of Electrical and Energy)*; Halil Ibrahim Bülbul (Gazi University)                 | <b>ID:117 Smart Solar Surplus Energy Management System-AI: A Microcontroller-Based AI System for Surplus Solar Energy Management</b><br>Ahmed Ali (University of Johannesburg)*                                                 | <b>ID:283 Deep Learning-Based Anomaly Detection in Smart Grids for Real-Time Cyber-Physical Security and Operational Stability</b><br>Sonya Shiryayeva (Russian State Agrarian University – Moscow Agricultural Academy named after K.A. Timiryazev)*                           | <b>ID:236 Smart Grid Architecture and Functionalities and Developments</b><br>Dr. Moses Kabeyi (Durban University of Technology)*                                                                                                       |
| 16.50-17.10        |                                                                                                                                                                                                                                                                                     | <b>ID:279 Off-Grid Hybrid Microgrid Sizing Optimization Using The Bezier Curve Optimization Algorithm</b><br>Aslı Kurt (Karabük University)*; Mehmet Demirtaş (Gazi University); İpek Çetinbaş (Eskişehir Osmangazi University) | <b>ID:286 The Effect of Renewable Energy Penetration on Supply Security Risk and Carbon Emissions: A Comparative Two-Scenario Model</b><br>Mehmet Rida TUR (Batman Universitesi TBMYO Department of Electrical and Energy)*; Halil Ibrahim Bülbul (Gazi University)             | <b>ID:237 Distributed and Decentralised Energy Resources: Sources and Their levelized Costs</b><br>Dr. Moses Kabeyi (Durban University of Technology)*                                                                                  |
| 18.00-20.00        | <b>Welcome Party</b>                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                         |

| Date: 08 JULY 2026 |                                                                                                                                    |
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| KEYNOTE-III        |                                                                                                                                    |
| 10.00-11.00        | <p>Speaker:<br/> <b>Professor Radu-Daniel Vatavu</b><br/> <b>Stefan cel Mare University of Suceava, Romania</b></p> <p>Chairs:</p> |
| 11.00-11.20        | COFFEE BREAK                                                                                                                       |

| Date: 08 JULY 2026 |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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|                    | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                                                                                       | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                                                                                                         | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                    | SESSION 07<br>CHAIRS: Youcef SOUFI, Halil Ibrahim BULBUL                                                                                                                                                                                                                                                                                   | SESSION 08<br>CHAIRS: Onder EYECIOGLU, Erdal BEKIROGLU                                                                                                                                                                                                                                                                                                                                                                                                               | SESSION 09<br>CHAIRS: Korhan KAYISLI, Erdal IRMAK                                                                                                                                                                                                                                                                                                            | SESSION 010<br>CHAIRS: Ramazan BAYINDIR,                                                                                                                                                                                                                                                                                                                                                                                                                |
| 11.20-11.40        | <b>ID:147 Technical Analysis of Customer-Based and Grid-Topology-Aware Load Shifting in an Industrial Zone</b><br>Celal Ugurluyol (Institute of Science Karamanoglu Mehmetbey University); Umit Cetinkaya (Turkish Electricity Transmission Corporation); Seda Kul (Karamanoglu Mehmetbey University)*; Ramazan Bayindir (Gazi University) | <b>ID:132 International Validation of FDC as a Sizing tool for Small Hydropower Plants: Study case in Romania and Spain</b><br>Pedro-Manuel Gómez-Garrido (Universidad de Jaén)*; Constantin Ungureanu (Stefan cel Mare University of Suceava Suceava); Laurentju-Dan Milici (Stefan cel Mare University of Suceava Suceava); Blas Ogayar-Fernández (University of Jaen); Andrés López-Valdivia (University of Jaen)                                                 | <b>ID:217 False Data Injection Attack Detection in Smart Grid State Estimation Using State Vector Residual Analysis and Random Forest Classification</b><br>Riyaz Ahammed Syed (Nitte University)*; K Durga Syam Prasad (Vignan's Institute of Information Technology); Sampath S, Kumar (Don Bosco Institute of Technology)                                 | <b>ID:221 Data-Driven Framework for Real-Time Carbon Accounting and Sustainability Monitoring in Off-Grid Urban Residential Microgrids</b><br>Dr. Sri Raman Kothuri (Department of CSE, Alliance School of Advanced Computing, Alliance University, Anekal, Bengaluru-562106)*; Mavuri Arunakumari (Vignan's Institute of Information Technology ); E. Shiva prasad (Valluripalli Nageswara Rao Vignana Jyothi Institute of Engineering and Technology) |
| 11.40-12.00        | <b>ID:148 BESS Sizing for Industrial Prosumers: A Grid Dependency-Oriented Comparison of Combination Based and Target-Oriented Approaches</b><br>Ahmet Korkmaz (nKaramanoglu Mehmetbey University ); Umit Cetinkaya (Turkish Electricity Transmission ); Seda Kul (Karamanoglu Mehmetbey University)*; Ramazan Bayindir (Gazi University)  | <b>ID:140 Multilayer Perspectron Neural Networks for short- term electricity demand Prediction for Senelec's resilient power grid</b><br>Alphousseyni Ndiaye (Université Alioune Diop de Bambey-Senegal)*; Oumy WAGNE (Alioune Diop University of Bambey); El Hadji Mbaye Ndiaye (Alioune Diop University of Bambey); Daouda Gueye (Alioune University of Bambey); Mamadou Traoré (Alioune Diop University of Bambey); Amadou Ba (Alioune Diop University of Bambey) | <b>ID:218 Federated Deep Learning for Decentralized Cybersecurity in Smart Grid Communication Networks</b><br>Riyaz Ahammed Syed (Nitte University)*; Anand Venkata (Vignan's Institute of Information Technology); Santhosha Santhosha Kumar A (Central University of Karnataka)                                                                            | <b>ID:296 Grid-Side Communication Requirements for Small Modular Reactors as Ancillary Service Providers in the Smart Grid</b><br>Erdal Bekiroglu (Gazi University)*; Erdal Irmak (Gazi University); Ebru Ekici Güngör (Gazi University); Özgün Güngör (Gazi University)                                                                                                                                                                                |
| 12.00-12.20        | <b>ID:138 Comparative Analysis of Energy Consumption Patterns in Residential and Commercial Buildings for Sustainable Resource Management</b><br>A S M Ashraf Mahmud (University of the West of Scotland)*                                                                                                                                 | <b>ID:141 An Interpretable Hybrid Deep Learning Framework for Power System State Monitoring Using Temporal Fusion Transformers</b><br>Venkatesh Daggupati (Texas TEch University)*                                                                                                                                                                                                                                                                                   | <b>ID:219 Graph Neural Network-Enhanced Reinforcement Learning for Large-Scale Electric Vehicle Charging Coordination in Urban Grids</b><br>Bachina Harishbabu (VNR vignana jyothis institute of Engineering and Technology)*; K Durga Syam Prasad (Vignan's Institute of Information Technology); Satheesh S. (Kallam Haranadreddy Institute of Technology) | <b>ID:308 Electric Vehicle Charging Infrastructure in Türkiye: An Integrated Socio-Technical Framework for Network Readiness, Standards and Energy Justice</b><br>Hafize Nurgül Durmuş Şenyapar (Gazi University) Oguz Tasdemir (Kırşehir Ahi Evran University) İlhami Colak (İstinye University) Ensar Kiliç (Türkiye Electricity Distribution Corp.) Ramazan Bayindir (Gazi University)                                                               |
| 12.20-12.40        | <b>ID:150 Autonomous Vehicle Social Acceptance and Smart Mobility Integration: A Thematic Review of Public Trust, Shared Mobility, and Road Coexistence</b><br>Ercan Kayalıoğlu (Gazi Üniversitesi)*; Seyfettin Vadi (Gazi Üniversitesi); Hafize Nurgül Durmuş Şenyapar (Gazi Üniversitesi); Ramazan Bayındır (Gazi Üniversitesi)          | <b>ID:222 Multi-Source Feature Integration for Short-Term Load Forecasting in Off-Grid Residential Microgrids Using Stacked LSTM Networks</b><br>Dr. Sri Raman Kothuri (Department of CSE, Alliance School of Advanced Computing, Alliance University, Anekal, Bengaluru-562106)*; Avinash Kathi (Vignan's Institute of Information Technology)                                                                                                                      | <b>ID:220 TFT-PPO: Proactive Power Quality Control for EV Fast-Charging Clusters via Transformer-Based Demand Forecasting and Reinforcement Learning</b><br>Bachina Harishbabu (VNR vignana jyothis institute of Engineering and Technology)*                                                                                                                | <b>ID:178 Hybrid Gradient Boosting and Anomaly Detection Framework for Autonomous Peak Demand Management in Commercial Building Energy Systems</b><br>Mutharasan A (Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology)*                                                                                                                                                                                                        |
| 12.40-13.30        | LUNCH                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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|                    | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                                                                                                         | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                     | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                                                                                              |
|                    | SESSION 011<br>CHAIRS: Youcef SOUFI, Halil Ibrahim BULBUL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SESSION 012<br>CHAIRS: Onder EYECIOGLU, Erdal BEKIROGLU                                                                                                                                                                                                                                                                                                      | SESSION 013<br>CHAIRS: Korhan KAYISLI, Erdal IRMAK                                                                                                                                                                                                                       | SESSION 014<br>CHAIRS: Ramazan BAYINDIR,                                                                                                                                                                                                                                                                                                          |
| 13.30-13.50        | ID:185 Ensemble Learning for Hourly Energy Forecasting in PV-Integrated Research Buildings: Temporal Validation, VIF Optimization, and Peak Demand Classification<br>Riyaz Ahammed Syed (Nitte University)*; Venkata Lakshmi Vasamsetti (Vignan's Institute of Information Technology )                                                                                                                                                                                                                                                                                                                                                     | ID:158 A Consumer-Centric Approach to Energy Management System Modeling<br>Mirela Dobra (Technical University of Cluj-Napoca)*; Ionut Roman (Technical University of Cluj-Napoca); Mircea Raceanu (ICS)                                                                                                                                                      | ID:172 Real-time optimization of a dynamic system (PV- BESS) integrated into a building for self-consumption<br>Alphousseyni Ndiaye (Universite Alioune Diop de Bambey-Senegal)*; Daouda Gueye (Alioune Diop University Bambey.)                                         | ID:207 Self-Healing Smart Grid Architecture Using Intelligent Power Electronic Controllers<br>Dagguapati Venkatesh (TEXAS TECH UNIVERSITY)*                                                                                                                                                                                                       |
| 13.50-14.10        | ID:152 Autonomous Vehicle Acceptance and Complementarity of Solar and Wind Resources in West Africa: The Case of Guinea<br>Ercan Kayaloğlu (Gazi Üniversitesi)*; Seyfettin Vadi (Gazi Üniversitesi); Hafize Nurgül Durmuş Şenyapar (Gazi Üniversitesi); Ramazan Bayındır (Gazi Üniversitesi)                                                                                                                                                                                                                                                                                                                                                | ID:159 Multi-Scale Analysis of the Spatio-Temporal Complementarity of Solar and Wind Resources in West Africa: The Case of Guinea<br>Alphousseyni Ndiaye (Universite Alioune Diop de Bambey-Senegal)*; Ousmane Barry (Alioune Diop University Bambey); Mamadou Traoré (Alioune Diop University Bambey); Cheikh Saliou Touré (Alioune Diop University Bambey) | ID:181 Neural Network Architectures for Building Energy Forecasting: A Head-to-Head Benchmark Against LightGBM with Sequence Length Optimisation<br>Riyaz Ahammed Syed (Nitte University)*; Vikas Marakin (Ritsumeikan University)                                       | ID:196 Integrated Machine Learning-Based SOC Prediction, Regenerative Energy Optimization, and Battery Health Assessment for Urban Logistics Electric Vehicles<br>Ramakrishna nuvvula s s (NITTE NMAMIT)*; Parvathi b (Ballari Institute of technology and management, Ballari); Ahmed Ali (University of Johannesburg)                           |
| 14.10-14.30        | ID:163 A Data-Driven Framework for Rotational Grazing Management Based on Mixed Effects Modeling of Reindeer Pastures<br>Kirill Kravtsov (Department of Systems Analysis and Operations Research, Rostov State University of Science and Technology, Rostov-on-Don, Russia)*; Svetlana Pchelintseva (Russian State Agrarian University – Moscow Timiryazev Agricultural Academy); Dmitry Evryukov (Russian State Agrarian University – Moscow Timiryazev Agricultural Academy); Boris Podgorn (Russian State Agrarian University – Moscow Timiryazev Agricultural Academy); Elena Sapun (Rostov State University of Science and Technology) | ID:164 Analysis and Design of a Green Hydrogen Energy Storage Microgrid for Residential Applications<br>Adrian Pop (Technical University of Cluj Napoca)*; Ferencz HAVADI (Technical University of Cluj Napoca); Roland POLICSEK (Technical University of Cluj Napoca)                                                                                       | ID:174 A Centralized MINLP-based MPC for Building Microgrid with Surface Water Heat Pump<br>Nassima OUALI (ESIGELEC)*; Thomas Chevet (ESIGELEC); Nicolas Langlois (ESIGELEC)                                                                                             | ID:179 Comparative Evaluation of Metaheuristic Algorithms for Battery-Aware Energy Dispatch Optimization<br>shiva prasad (VNR VJIET)*; Santosh Pavada (Vignan's Institute of Information Technology)                                                                                                                                              |
| 14.30-14.50        | ID:154 Deployment-Aware Evaluation of Short-Term PV Forecasting Models Using a Composite Efficiency-Accuracy Index for Smart Grids<br>Özge Çelik (Ministry of National Education)*; Kadriye Filiz Balbal (Dokuz Eylül University); Sebahattin İlkıardeş (Balıkesir University)                                                                                                                                                                                                                                                                                                                                                              | ID:168 Integrating Live Sensor Data and Machine Learning in Digital Twin Simulations<br>KHAJA AKRAM MOHAMMED (TRINE UNIVERSITY)*                                                                                                                                                                                                                             | ID:176 A Digitally Controlled Solid-State Transformer Architecture for Smart Grid-Oriented Low-Voltage DC Distribution Systems<br>Enver Ulusoy (Gazi University)*; Ceyda Cogal (Gazi University)*; Turgut Mert Aksoy (Gazi University); Hidir Duzkaya (Gazi University)* | ID:171 AI-Native Resource Allocation and Predictive Optimization in Ultra-Dense 6G Communication Networks<br>Kameswaran Arunchalam (T-Mobile)*; Venkata Bokam (Solutions Architect Nokia)                                                                                                                                                         |
| 14.50-15.10        | ID:156 Validation of the dynamic performance of the perturb and observe type MPPT controller adapted to meteorological variations in the Sahelian region of Chad<br>MBAITELBE Koularambaye (Polytechnic University of Mongo )*; Odingar Nadjibeye (University of N'Djamena ); Alphousseyni Ndiaye (Alioune Diop University of Bambey); Awat Abderahim (University of N'Djamena)                                                                                                                                                                                                                                                             | ID:170 Self-Optimizing Autonomous Network Framework for Intelligent Fault Detection and Recovery in 6G Systems<br>Kameswaran Arunchalam (T-Mobile)*; Venkata Bokam (Solutions Architect Nokia)                                                                                                                                                               | ID:177 Peak Demand Detection in PV-Integrated Building Energy Systems Using Isolation Forest and Consensus Voting: Seasonal Performance and Economic Viability<br>shiva prasad (VNR VJIET)*                                                                              | ID:180 A Multi-Objective Metaheuristic Framework for Demand-Side Management in Isolated Tropical Photovoltaic Microgrids: Performance Bounds and Battery Trade-off Analysis<br>VINAY KULKARNI (Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering & Technology)*; Jyothsna Palleti (Vignan's Institute of Information Technology) |
| 15.10-15.30        | ID:182 Machine Learning-Based Energy Consumption Prediction Using Integrated PV Generation and Dynamic Pricing in Research Facility Operations<br>Riyaz Ahammed Syed (Nitte University)*                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ID:191 Multi-Agent Deep Reinforcement Learning for Distributed Energy Management and Demand Response in Residential Microgrids<br>Mahesh N (Global Academy of Technology)*; Dr. Sampath Kumar S (Don Bosco Institute of Technology); Ahmed Ali (University of Johannesburg)                                                                                  | ID:197 Tree-Based Ensemble Forecasting of PV Generation, Load Demand, and Battery SOC in Tropical Island Microgrids: A Multi-Horizon Cross-Season Evaluation<br>Ramakrishna nuvvula s s (NITTE NMAMIT)*                                                                  |                                                                                                                                                                                                                                                                                                                                                   |
| 15.30-15.40        | BREAK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                   |

| Date: 08 JULY 2026 |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                     |
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|                    | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                         | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                                     | ONLINE PRESENTATIONS                                                                                                                                                                                                                                    | ONLINE PRESENTATIONS                                                                                                                                                                                                                |
|                    | SESSION 015<br>CHAIRS: Youcef SOUFI, Halil Ibrahim BULBUL                                                                                                                                                                                                                    | SESSION 016<br>CHAIRS: Onder EYECIOGLU, Erdal BEKIROGLU                                                                                                                                                                                                                                  | SESSION 017<br>CHAIRS: Korhan KAYISLI, Erdal IRMAK                                                                                                                                                                                                      | SESSION 018<br>CHAIRS: Ramazan BAYINDIR,                                                                                                                                                                                            |
| 15.40-16.00        | ID:192 Reward-Augmented Deep Reinforcement Learning for Robust Battery Dispatch Optimization in Off-Grid Photovoltaic Microgrids<br>Dr NARENDRA KUMAR (RNSIT AIML (GTTC))*; Dr Rama satish K V (RNS Institute of Technology (RNSIT)); Ahmed Ali (University of Johannesburg) | ID:198 Real-Time Hybrid Particle Swarm and Grey Wolf Optimization for PV Curtailment Reduction and Battery Longevity in Isolated PV-Battery Microgrids<br>Dr. Raghavendra P (BITM)*                                                                                                      | ID:208 Investigation of the Effects of Photovoltaic Panel Cooling Using Hydroelectric Power Plant Discharge Water on Energy Production and System Efficiency<br>Burak Çelik (Marmara University)*; Onur Akar (Marmara University)                       | ID:238 Conversion Technologies for Decentralized Generation and Their Payback Ratios<br>Dr. Moses Kabeyi (Durban University of Technology)*                                                                                         |
| 16.00-16.20        | ID:187 Consensus-Based Anomaly Detection for PV-Integrated Building Energy Management: Seasonal Characterisation and Severity Stratification<br>Ramesh T (KPR Institute of Engineering and Technology)*                                                                      | ID:193 DEEP LEARNING-BASED DETECTION OF DATA INTEGRITY CYBER-ATTACKS ON SCADA LOAD DATA IN SMART GRIDS<br>Dr NARENDRA KUMAR (RNSIT AIML (GTTC))*; Malikarjuna B (RNS Institute of Technology (RNSIT) Bengaluru, Karnataka, India); Ahmed Ali (University of Johannesburg)                | ID:213 Design and Simulation of Double Quantum Well AlxGa1-xAs/AIAs ASPAT Diode<br>Bashar Hussein (Ninevah University)*; Khalid Mohammed (Ninevah University)                                                                                           | ID:239 Approached in Grid Integration of Decentralized and Distributed Energy Recourses<br>Dr. Moses Kabeyi (Durban University of Technology)*                                                                                      |
| 16.20-16.40        | ID:203 A New Integral LQR based Primary Feedback Controller Design with Improved Power Quality for Multi-DGs based Microgrid Operation<br>Prakash Patra (GIET UNIVERSITY)*                                                                                                   | ID:194 Predictive Energy Management of Standalone Solar Microgrids Using Machine Learning and Battery Stress Analysis<br>Dr NARENDRA KUMAR (RNSIT AIML (GTTC))*; Malikarjuna B (RNS Institute of Technology (RNSIT) Bengaluru, Karnataka, India); Ahmed Ali (University of Johannesburg) | ID:214 Design and Simulation of QW-ASPAT Diode with Different Barrier Dimensions<br>Bashar Hussein (Ninevah University)*; Khalid Mohammed (Ninevah University)                                                                                          | ID:254 Optimization of Battery Energy Storage System Capacity for Peak Load Shaving in Distribution Networks Based on Real Data<br>Olesya Oleynikova (Russian State Agrarian University - Moscow Timiryazev Agricultural Academy )* |
| 16.40-17.00        | ID:189 Voltage-Based Islanding Control for Grid-Connected RES for Grid Stability Using Deep Learning<br>Remon Das (Western Carolina University)*; Akash Debnath (Dominion Energy); Ushna Das (Chittagong University of Engineering and Technology)                           | ID:195 Data-Driven Autonomous Voltage Control in Off-Grid PV Microgrids Using Soft Actor-Critic Reinforcement Learning<br>Dr Nayana Shetty (NMAMIT)*; Nandini S Patil (Ballari Institute of Technology and Management ); Ahmed Ali (University of Johannesburg)                          | ID:215 Performance Assessment of PV-Wind Hybrid Energy System with Grid Integration<br>Ramakrishna nuvvula s s (NITTE NMAMIT)*; Eswara Rao Thamatapu (SR University, Warangal); Karthik Markala (SR University); Ahmed Ali (University of Johannesburg) | ID:246 Regulatory Frameworks for Risk Management of Generative AI Deployment in Automated Smart Grid Dispatch Systems<br>Полина Черняева (студентка)*                                                                               |
| 17.00-17.20        |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                     |
| 18.00-20.00        | Gala Dinner                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                     |

Date: 09 JULY 2026

|             | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                                                                                                                                         |
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|             | SESSION O19<br>CHAIRS: Onder EYECIOGLU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SESSION O20<br>CHAIRS: Korhan KAYISLI                                                                                                                                                                                                                                                                                                                                                        |
| 09.00-09.20 | <b>ID:223 Seasonal Generalization of Tree-Based Machine Learning for Multi-Horizon PV, Load, and Battery Forecasting in Tropical Island Microgrids</b><br>Dr. Sri Raman Kothuri (Department of CSE, Alliance School of Advanced Computing, Alliance University, Anekal, Bengaluru-562106)*; K Durga Syam Prasad (Vignan's Institute of Information Technology); M K Vijay Kumar (Ballari Institute of Technology and Management); Shiva prasad (Valluripalli Nageswara Rao Vignana Jyothi Institute of Engineering and Technology) | <b>ID:305 Integrating Consumer Behavior into EENS-Based Reliability Assessment: Demand Flexibility, Peak Concentration, and Electric Vehicle Charging Scenarios</b><br>Mehmet Rida Tur (Batman University)<br>Hafize Nurgul Durmus Senyapar (Gazi University)<br>Ramazan Bayindir (Gazi University)*<br>Merve Suvak (Batman University)                                                      |
| 09.20-09.40 | <b>ID:226 A Machine Learning-Augmented Penalty Difference Approach for Transportation Cost Optimization</b><br>Riyaz Ahammed Syed (Nitte University)*                                                                                                                                                                                                                                                                                                                                                                              | <b>ID:307 Higher-Order Phase-Coupling Typicality for Detecting and Classifying Stealthy False Data Injection Attacks in Smart Grids</b><br>Mete Işıklı (Gazi University)*<br>Seyfettin VADI (Gazi University)                                                                                                                                                                                |
| 09.40-10.00 | <b>ID:227 Automated AI-Driven Reduced-Latency Fraud Detection for Secure Smart Metering and Energy Billing Systems</b><br>Ghouse Syed (CMR University)*                                                                                                                                                                                                                                                                                                                                                                            | <b>ID:293 Hybrid Renewable Energy Integration Framework for Smart Grid Stability, Energy Storage Management and Sustainable Power Delivery</b><br>G Shanmugasundar (Sri Sairam Engineering College)<br>Anil Kumar (PERI Institute of Technology)<br>Chaithra S. (Cambridge Institute of Technology)<br>Ahmad Alkhayyat (The Islamic University Najaf)<br>Sudeep Varshney (Sharda University) |
| 10.00-10.20 | <b>ID:228 Physics-Informed AI Techniques for Power Electronic Converter Reliability Assessment</b><br>Daggupati Venkatesh (TEXAS TECH UNIVERSITY)*;<br>NAGA SAI KALYAN CH (VVIT University)                                                                                                                                                                                                                                                                                                                                        | <b>ID:309 Concept Level Techno Operational Assessment of a Grid Connected Rooftop PV BESS Inverter System for a 60 Office Building in South England</b><br>Emad Al-Mahdawi (MidKent College Chatham)<br>Chris Harley (Cranfield University)                                                                                                                                                  |
| 10.20-10.40 | <b>ID:229 IoT-Enabled Power Electronic Monitoring System for Next-Generation Energy Networks</b><br>Daggupati Venkatesh (TEXAS TECH UNIVERSITY)*;<br>NAGA SAI KALYAN CH (VVIT UNIVERSITY)                                                                                                                                                                                                                                                                                                                                          | <b>ID:248 Supertwisting Sliding Mode based MPPT and Adaptive SPWM for PV-Fuel Cell Hybrid System with 2-level Boost Converter</b><br>Ruhi Zafer Caglayan (TED University); Korhan Kayisli (Gazi University)*; Firat Hardalac (Gazi University);<br>Mariacristina Roscia (University of Bergamo)                                                                                              |
| 10.40-11.00 | <b>ID:230 Sustainability-Oriented Framework for Design, Planning and Operations of Isolated Microgrids in the Era of Uncertainties</b><br>Onyema Nduka (Royal Holloway University of London)*;<br>Amirhossein Adib (Royal Holloway University of London)                                                                                                                                                                                                                                                                           | <b>ID:247 Application of Machine Learning Methods for Energy Harvesting Forecasting by Biomechanical Sensor Networks in Smart Clothing Concept</b><br>Полина Черняева (студентка)*                                                                                                                                                                                                           |
| 11.00-11.10 | BREAK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                              |

| Date: 09 JULY 2026 |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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|                    | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                               | ONLINE PRESENTATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                    | <b>SESSION O21</b><br><b>CHAIRS: Onder EYECIOGLU</b>                                                                                                                                                                                                                               | <b>SESSION O22</b><br><b>CHAIRS: Korhan KAYISLI</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 11.00-11.20        | <b>ID:290 Enhancing Reliability, Efficiency, and Sustainable Energy Management in Modern Power Systems Using Particle Swarm Optimization (PSO)-Based Smart Grid Applications</b><br>B Swarna (SIMATS)*                                                                             | <b>ID:297 Inertia Contribution of the Akkuyu NPP and Small Modular Reactors to Frequency Stability in the Turkish Power System</b><br>Seyfettin Vadi (Gazi University)*; Ebru EKİCİ GÜNGÖR (Gazi University); Özgün GÜNGÖR (Gazi University)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 11.20-11.40        | <b>ID:291 HVDC-Enabled Smart Grid Architecture for Long-Distance Renewable Power Transfer and Wide-Area Grid Interconnection</b><br>B Swarna (SIMATS)*                                                                                                                             | <b>ID:301 Power Quality and Harmonic Analysis of Multi-pulse Silicon Controlled Rectifier-Based Rectifiers for Industrial-Scale Water Electrolyzers Under Partial-Load Conditions</b><br>Junior Diamant Ngando Ebba (Université Le Havre Normandie)*<br>Joselyn Stephane MENYE (University of Le Havre Normandie)<br>Mamadou-Bailo Camara (University of Le Havre Normandie)<br>Mamadou Lamine Doumbia (University of Québec à Trois-Rivieres)<br>Brayima Dakyo (University of Le Havre Normandie)<br>Joseph Song-Manguelle (University of Québec à Trois-Rivieres)                                                                                                                                                                                                                                    |
| 11.40-12.00        | <b>ID:292 A Microgrid-Based Energy Management Framework for Resilient Electric Vehicle Charging Infrastructure in Transportation Systems</b><br>B Swarna (SIMATS)*                                                                                                                 | <b>ID:294 A Simulation-based Evaluation of Smart Grid Applications for Resilient and Energy-Efficient Power Distribution Networks</b><br>B Swarna (SIMATS)*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 12.00-12.20        | <b>ID:186 Eco-Efficiency Profiling of Artificial Intelligence Models: A Cluster-Based Analysis of Energy Consumption, CO2 Emissions, and Performance Trade-offs</b><br>Onder Eyecioglu (Bolu Abant Izzet Baysal University)*;<br>Umit Senturk (Bolu Abant Izzet Baysal University) | <b>ID:234 Artificial Neural Network-Driven Energy Management and Control Strategy for Microgrid</b><br>Mohammed Abdulelah Albasheri (Laboratoire de Recherche en Electrotechnique et Automatique, University of Dr Yahia Fares, Medea)*; Youcef Soufi (Laboratoire du Génie Electrique-Labget, Departement of Electrical Engineering, University Echahid Larbi );<br>Mujammal Ahmed Hasan Mujammal (Laboratoire de Recherche en Electrotechnique et Automatique, University of Dr Yahia Fares, Medea);<br>Ouahid Bouchhida (Laboratoire de Recherche en Electrotechnique et Automatique, University of Dr Yahia Fares, Medea); Abderrezzak Cherifi (IUT de Mantes-en-Yvelines, Laboratoire END-ICAP - UMR1179);<br>Muntaser Mohammed Al-sharfi (Department of Technology University of Dr Yahia Fares) |
| 17.40-18.30        | <b>Closing Ceremony</b>                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## Presentation Instruction for icSmartGrid 2026 Presenters

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

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