2023 ISGT EUROPE

October 23-26 | Grenoble, France

2023 IEEE PES ISGT EUROPE

Powering solutions for decarbonized and resilient future smartgrids

CONFERENCE PROGRAMME

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SPONSORS PANEL SESSIONS

INDUSTRY PANEL SESSIONS

SPECIAL SESSIONS

Diamond Panel Session: Decarbonizing the energy sector: paradigm change, perspectives, and challenges for grid operators and solutions providers

Auditorium

SPONSOR PANEL SESSION

Energy sector in general and power systems in particular are considered as critical infrastructures for our modern societies. However, these infrastructures are expected to play an even critical role in the perspective of decarbonization for reaching the Carbon Neutrality by 2050 or even earlier. Indeed, the energy consumption in various economy sectors such as industry, buildings and transportation, is one of the main contributors for Green House Gas Emissions. As such, decarbonizing the energy sector is a major step for fulfilling Carbon Neutrality targets. Hence, intensifying electrification of consumptions while shifting usages from fossil-based energy to electrical-based energy is one of the most efficient levers for decarbonizing the energy sector. This can be illustrated in transportation with plug-in Electric Vehicles, in Building where the combination of electrification, energy efficiency and renewable energy supply will offset almost to zero their CO2 emissions, and in the industry through process shifting.

In this perspective, reaching Carbon neutrality targets will require the electricity share in the final energy consumption to jump from 20-25% today to approximately 50-60% by 2050. On the other hand, the necessity of interconnecting to the power grid massive renewable energy sources that are mostly "variable" in nature is significantly transforming the way these systems are designed, planned and operated while maintaining their resiliency. In addition, digitalization with smarter grids is more and more increasing at various levels of the energy chain, which represents at the same time an opportunity and a threat for power grids. Given the short period of transition for this complex energy sector, this move is a considerable challenge for the power system that should be adapted quickly through massive investments, more intelligence and flexibility.

In this panel, these challenges will be discussed with some insights on foreseen technical solutions to tackle these challenges seen both from DSO/TSO perspective and solutions provider. Related issues such as economical considerations, skill development, and innovation strategy will be addressed as well.

Moderated by: Prof. Nouredine Hadjsaid (VP IEEE PES / Director G2Elab / Grenoble INP Univ. Grenoble Alpes, France)

Panelists:

Gabriel Bareux (R&D Director at RTE, France)

Frederic Godmel (Executive Vice President for Power Systems and Services at Schneider Electric, France)

Pierre Mallet (R&D and innovation Director at Enedis, France)

Sponsor Panel Session Enedis: Smart and digital distribution networks to enable the energy transition and improve performance

Auditorium

SPONSOR PANEL SESSION

The power distribution network is, all over the world, at the crossroads of many transitions: environmental, technological, digital, economic, and societal.

We are going to move from a centralized electrical system to a partially decentralized system with intermittent and non-controllable generation means. Optimization will be organized at various, increasingly local, levels. And flexibility, enabled by the intelligent use of data, will be key to the system.

At the same time, digital transformation opens up prospects for major performance improvements and the development of services.

The panel will discuss the challenges facing DSOs and explore how new digital solutions will enable distribution grids to adapt to ongoing transformations and improve their operational performance. It will cover network planning and design, asset management, system operation and control, and the provision of services to customers.

Moderated by: Wayne Bishop Jr. (IEEE PES Vice President, Meetings and Conferences / Quanta Technology, USA)

Panelists:

Yves Barlier (Enedis, France)

Prof. Lina Bertling Tjernberg (KTH, Sweden)

Dr. Martha Symko-Davies (NREL, USA)

Yann Fromont (T&D Europe at Schneider Electric, France)

Jonathan Sykes (Quanta Technology, USA)

The Art of Resilience: Engineering Economics of Climate Change Adaptation in Power & Energy Systems

Kilimandjaro 1-2

SPECIAL SESSION

Climate change is one of the most complex issues of our time. It poses an increasing risk to our critical infrastructure and requires significant investment for upgrades, mitigation, and adaptation. Power grids in particular are expected to be highly stressed by these events, combined with an ever-increasing power demand, reduced operational capacity, and increased probability of system failures resulting in significant power outages. The physical, operational, and financial losses caused by climate-related events such as wildfires, heatwaves, and hurricanes can reach hundreds of billions of dollars, threatening the financial health and solvency of the utilities and local governments. In addition, they can significantly hinder the ability of utilities and infrastructure owners to recover, which can lead to dire consequences for shareholders, ratepayers, and policymakers. That requires the development of a wide range of innovative engineering solutions, financial mechanisms, and policy incentives to achieve the financial, operational, and physical resilience expected from a 21st-century power infrastructure. This panel brings together four distinguished panelists to discuss this topic.

Moderated by: Dr. Ali Arabnya, (Director at Quanta Technology / Research Prof. at Univ. of Denver, USA)

Panelists:

Dr. Hong Chen (Principal Engineer, PJM Interconnection, USA): "Grid Operation under extreme weather"

Dr. Damir Novosel (Founder & President, Quanta Technology, USA): "Importance of Electrical System Resilience to Mitigate Impacts from and Adapt to Climate Change"

Dr. Martha Symko-Davies (Laboratory Program Manager for Energy Systems Integration, NREL, USA): "Community driven equitable and resilient clean energy transitions - From flexible designs to implementation"

Dr. Vladimir Terzija (F.IEEE / F.Humboldt / Prof. of Energy Systems and Networks, Newcastle University, UK): "On Data-driven and technology supported solutions for future resilient energy systems"

Exploring the Role of Data Science in Overcoming Challenges of Sustainable Energy Transition
Kilimandjaro 3-4

SPECIAL SESSION

The energy sector's current scientific challenges, mostly linked to energy transition and digitalization, could benefit from the most recent developments in data science. With relevant use cases of invited papers proposing a range of presentations from academics and industrial partners (big companies and smaller start-ups), the idea is to illustrate major aspects of deep changes in the way energy systems have to be managed from operational and long-term planning perspectives. Data science, about AI techniques, is one possible set of techniques that is able to propose solutions where more traditional methods are failing, because of the size of the new problems to solve, the uncertainty to consider when making decisions, the ever-changing environment, etc.

Moderated by: Dr. Vincent Debusschere (Assoc. Prof. at Grenoble INP | Univ. Grenoble Alpes, France)

Panelists:

Dr. Rémy Rigo Mariani (Researcher at CNRS, G2ELab, France): "Artificial intelligence for the management of energy systems, context and case studies"

Prof. Mladen Kezunovic (TAMU, USA): "The use of Big Data and ML/AI for predicting the risk of grid outages and DERs for improving the grid resilience"

Dr. Hussain Syed Kazmi (Assist. Prof. at KU Leuven, Belgium): "Improving renewable forecasting or engaging distributed flexibility: opportunities and challenges in energy data science"

Claude Le Pape-Gardeux (Fellow Data Scientist at Schneider Electric, France): "Data and Artificial Intelligence to Manage Energy Flexibility on the Demand Side"

Dr. Mònica Aragüés Peñalba (Assoc. Prof. at UPC Barcelona, Spain): "Data driven services for distribution grids with increasing penetration of renewables. BD4OPEM H2020"

Dr. Arturo Bretas (Senior Researcher at CNRS, G2Elab, France): "Cross-Layered Physics-informed Machine Learning models for Cyber-Secure Distributed Energy Management Systems"

Global Perspectives on the Utility of the Future   *Auditorium*

INDUSTRY PANEL SESSION

The electric power industry is being transformed and reshaped with renewable, clean, and more resilient energy solutions. Robust decarbonization goals are being set along with more pressure to increase reliability and become more resilient. This is coupled with the challenges of an aging infrastructure and a changing workforce. Power utilities are at the center of this challenge; tasked with integrating record levels of new, renewable, energy assets while accommodating dramatically increased multidirectional power flows, and hardening the grid to prepare for increasingly severe weather events exacerbated by climate change. This panel is made up of international industry executives who will present and discuss ideas and initiatives driving Decarbonization, Grid Modernization, Electrification, and the Utility of the Future.

Moderated by: Wayne Bishop Jr. (IEEE PES Vice President, Meetings and Conferences / Quanta Technology, USA)

Panelists:

Matthieu Terenti (Head of EV partners and co-construction department at Enedis, France)

Michel Bena (R&D Deputy Director at RTE, France)

Shay Bahramirad (LUMA Electric Utility, Puerto Rico)

Juan Carlos Montero (ICE Utility, Costa Rica)

Chris Root (Vermont Electric Corporation, USA)

Intelligent applications for energy communities and storage systems

Kilimandjaro 1-2

SPECIAL SESSION

Growing global environmental concerns have prompted a quest for more sustainable energy sources and more efficient methods of energy management. Since their utilization is on the rise, renewable energy sources have less of an impact on the conventional generation's flexibility. The system must include new sources of flexibility, such as the demand flexibility provided by demand response programs and the use of storage. Together with distributed generation, demand response, and electric car management, distributed storage is a key component of effective local energy resource management, particularly in energy communities. Artificial intelligence (AI) offers potential answers to the difficult energy management issue in the current conditions. This panel discussion will concentrate on how to effectively use intelligent and/or AI-based solutions in both rural and urban energy areas. The interaction between members of energy communities and with outsider players is covered.

Moderated by: Prof. Bruno François (L2EP-Centrale Lille, France) and Joao SOARES (GECAD-PolyTech Porto, Portugal)

Panelists:

Diva Alyssa Mustika (Ph.D. at Sween and Univ. Grenoble Alpes, France): "Optimization Methods for Renewable Energy Communities - Practical case with Sween"

Prof. Zita Vale (Polytechnic Institute of Porto, Portugal)

Dr. Cindy Paola Guzman (Postdoc Researcher at INESC-ID, Portugal): "Electric Vehicles Management for Carbon Neutrality in Europe: An overview and main innovations"

Dr. Akhtar Hussain (Postdoc Researcher at Univ. of Alberta, Canada): "Energy Allocation of Community Energy Storage System"

Bas Kruimer (DNV, Netherlands): "Building the NextGen GridOps Real-time Data Machine"

Grid Decarbonization Challenges: Global Perspectives   *Kilimandjaro 3-4*

SPECIAL SESSION

The urgent need for addressing climate change has driven the transformation of power systems worldwide, with a primary focus on decarbonization through the integration of renewable energy sources. Bringing together leading experts, this special session delves into the intricate challenges faced during the pursuit of grid decarbonization in Europe and across the globe, to shed light on these challenges and explore innovative solutions.

Moderated by: Dr. Vincent Debusschere (Assoc. Prof. at Grenoble INP | Univ. Grenoble Alpes, France)

Panelists:

Prof. Costas Vournas (National Technical Univ. of Athens, Greece): "Challenges for Grid Stability and Security in a Decarbonized Power System"

Claire Lajoie Mazenc (Senior Scientific Counselor at RTE / past-President F.IEEE / F.CIGRE, France): "Contribution to European decarbonization policies"

Juan Carlos Montero (ICE Utility, Costa Rica): "Decarbonation experiences in Costa Rica"

Zhenyu (Henry) Huang (F.IEEE / Division Director at Argonne National Laboratory, USA): "Grid Modernization for Clean Energy Transition"

Lara Lapotnikoff (Business Development at Envelio GmbH, Germany): "Intelligent grids for a sustainable future worldwide - Why the digital twin of the power grid is the fastest way to achieve the climate goals"

Sponsor Panel Session RTE: Ensuring the Resilience from this winter to 2050

Auditorium

SPONSOR PANEL SESSION

In France, and more generally in Europe, last winter showed that due to various and unexpected phenomena, the security of the supply of electricity needed new actions to be achieved. It acted as a reminder that the electric system has to be prepared to face diverse and new constraints, in other words: to be more resilient. In the short term, flexibilities have to be developed with existing assets and, in the long term, phenomena such as climate change or potential raw materials shortages have to be assessed to determine their impact on the way we'll have to operate the electric system and specify new assets in the grid. In this panel, we will hear specialists on the concept of resilience and then the point of view of industrials and grid operators about the problems to tackle and the solutions to be found. The round table will be moderated by RTE, President and member of Think Smartgrids, in support of the association's efforts to develop flexibility on an industrial scale in France.

Moderated by: Gabriel Bareux (R&D Director at RTE, France)

Panelists:

TBC

TBC

TBC

TBC

Advancing Energy Storage Solutions for Sustainable Development in Power Systems

Kilimandjaro 1-2

INDUSTRY PANEL SESSION

In the pursuit of a sustainable and decarbonized energy future, the role of energy storage has become paramount. The special session explores the latest advancements, challenges, and opportunities in the field of energy storage as a crucial enabler for sustainable development. This session stands at the nexus of technological innovation and environmental responsibility, fostering interdisciplinary collaborations that accelerate the transition to a sustainable energy landscape.

Moderated by: Hélène Schricke (Eviden Worldgrid, France)

Panelists:

Hélène Schrike (Eviden Worldgrid, France): "Worldgrid technical solutions for storage systems"

Christophe Dufour (Sicae de la Somme et du Cambraisis, France): "Operational implementation of supervision solution"

Ahmed Mohamed (Ph.D. at Univ. Grenoble Alpes, France): "OSS Platform: Valuation Models for Frequency Services Provision with an Energy Storage System"

Jean Dobrowolski (EnergyPool, France): "Microgrid implementation in New Caledonia"

Dr. Roman Le Goff-Latimier (Assoc. Prof. at SATIE, ENS Rennes, France): "Towards real world co-optimization of a storage system"

ETIP SNET: H2 integration in power systems   *Kilimandjaro 3-4*

INDUSTRY PANEL SESSION

The EU is undergoing an energy transformation towards a climate-neutral continent by 2050. It has set targets to progressively reduce greenhouse gas emissions towards clean energy to reach this goal and deliver on the EU's Paris Agreement commitments. These high-level climate targets will require structural changes in various sectors and impact society and the economy. Decarbonisation is reached mainly through electrifying various sectors (currently relying on fossil fuels) stemming from variable Renewable Energy Sources (vRES) and low-emission sources complemented by low-carbon gases.

The discussion on hydrogen as an energy carrier for the EU's decarbonisation intensified in 2020. In line with recent EU strategies on innovative sector integration and hydrogen, there is a consensus that hydrogen will play an essential role in the future. Thus, ETIP-SNET intends to understand the benefits and challenges of the hydrogen topic as a direct impact on power system operation and planning and, more broadly, in an optimised whole energy system perspective. In particular, this paper addresses the following High-Level Use Cases (HLUC) that are defined in the ETIP-SNET R&I Roadmap 2022-2031: HLUC1 "Optimal Cross Sector Integration and Grid Scale Storage", HLUC4 "Massive RES Penetration into the Transmission and Distribution Grid", HLUC5 "One-Stop Shop and Digital Technologies for Market Participation of Consumers (Citizens) at the Centre" and HLUC9 "Flexibility Provision by Buildings, Districts and Industrial Processes". This paper presents key findings, principles, and key messages for addressing R&D efforts and market/regulation changes needed"

Moderated by: **Dr. Thai-Phuong Do (CEA, France)**

Panelists:

Olaf Bernstrauch (Terna, Italy): "Presentation of the ETIP SNET from the Members of the Governing Board"

Prof. Georgios Christoforidis (Univ. of Western Macedonia, Greece): "Impact of hydrogen integration on power grids and energy systems, part 1"

Antonio Iliceto (Siemens Energy Global GmbH & Co. KG, Germany): "Impact of hydrogen integration on power grids and energy systems, part 2"

TBC

IEEE TechEthics Program: Societal Impacts of Smart Grid Technology: Benefits and Challenges

Auditorium

IEEE PANEL SESSION

This session will address the ethical and social impacts of the development and deployment of sustainable smart grid technologies. A panel of global experts will provide insights into the benefits and challenges of these technologies.

Moderated by: Mark A. Vasquez (IEEE Sr. Program Manager / IEEE TechEthics)

Panelists:

Prof. Simone Abram (Durham University, UK)

Dr. Fortune Nwaiwu (Research Associate at Univ. of Bath, UK)

Prof. Pritpal "Pali" Singh (Villanova Univ., USA)

Digitalization of distribution grids: Current and future challenges in Europe

Kilimandjaro 1-2

INDUSTRY PANEL SESSION

Decarbonization poses major challenges for the distribution grids in Europe. In addition to a strong expansion of renewable energies, new loads are also being integrated into the distribution grids. Electromobility in particular puts an enormous strain on the grids due to high charging capacities and high simultaneity. At the same time, more and more battery storage systems are being installed as solar energy storage systems, generation, and consumption communities are being set up, and the industry is increasingly relying on solar energy and battery storage systems. The challenges are diverse and pose completely new challenges for the distribution system operators. With this panel, various distribution grid operators have their say and present their current and future challenges. Together with the researchers, possible solutions for the digitization and transformation of the distribution grids are discussed on the basis of current research results.

Moderated by: **Prof. Jens Haubrock (Univ. of Applied Sciences and Arts of Bielefeld, Germany) and TBC Prof. Nikos Hatziagyriou (National Technical Univ. of Athens, Greece)**

Panelists:

Dr. Michael Kelker (Stadtwerke Bielefeld Netz GmbH, Germany)

Dr. Frederik Puhe (Westnetz GmbH, Germany)

Yamshid Farhat (Head of Technology & AI at BKW Energie AG, Switzerland): "Towards cellular energy systems: Challenges and opportunities of the Energy transition in Switzerland"

Katrin Schulte (HSBI AG NES, Germany)

Sébastien Julien (Head of Network Operations Department at GreenAlp, France): "Digitalization and sustainability from an urban DSO point of view"

Dr. Sreten Davidov (DNO Elektro Ljubljana d.d., Slovenia): "Integrating Real-Time Measurements in Distribution Grids: Advancing Observability and State Estimation"

Powering System Flexibility in the Future Through Renewable Energy Sources (Conclusions of the Posytyf EU H2020 project)

Kilimandjaro 3-4

SPECIAL SESSION

In the H2020 POSYTYF project https://posytyf-h2020.eu a new concept of Dynamic Virtual Power Plant (DVPP) has been introduced to fully integrate the dynamic aspects at all levels: locally (for each RES generator), globally (for grid ancillary services and interaction with other neighbor elements of the grid) and economically (for internal optimal dispatch and participation to electricity markets). It facilitates grid integration of renewables without a specific need for electrochemical storage. This DVPP concept relies on advanced modeling and control methodologies. Generators of a DVPP are actuated via centralized controls for full performance and robustness or via decentralized controls to increase resilience, implementation, and operation. These control, modeling, and analysis methodologies will be discussed in this section along with their implementations in simulation and hardware in the loop.

Moderated by: Prof. Bogdan Marinescu (Centrale Nantes, France)

Panelists:

Prof. Bogdan Marinescu (Centrale Nantes, France): "Dynamic Virtual Power Plant (DVPP) concept – coordination and decentralization in control of the DVPP renewable generators for grid ancillary services"

Dr. Vinu Thomas (Assist. Prof. at Ecole Centrale Nantes, France): "Hardware in the loop validation of DVPP controls"

Prof. Oriol Gomis (Technical Univ. of Catalonia, Spain): "Modeling and analysis of modern power systems including DVPPs"

Patrick Panciatici (Senior Scientific Advisor at RTE R&D Paris La Défence, France): "Energy transition: coordinating a large population of partially autonomous agents"

IEEE PES Workforce Initiative   *Auditorium*

IEEE PANEL SESSION

Power industry is undergoing remarkable transitions driven mainly by decarbonization and the resulting intensified electrification and grid modernization. The need for a qualified workforce for tackling these challenges has been pointed out as top priority by major power industry professionals. This Workforce panel comprised of European executives and industry leaders will discuss the challenges, proposed solutions, and ideas for collaboration between academia, industry, and IEEE.

Moderated by: Kamal Garg (Schweitzer Engineering Laboratories, Inc., USA) and Prof. Nouredine Hadjsaid (Grenoble INP | Univ. Grenoble Alpes, France)

Panelists:

Roberto Zangrandi (General Secretary EDSO Europe, Belgium)

Philippe Vié (Senior advisor at Capgemini Energy Transition and Utilities)

Regis Le Drezen (General Manager think Smartgrids, France)

Prof. Dirk Van Hertem (KU Leuven, Belgium)

Pär Lundström (Senior Policy Advisor, Installatörsföretagen; The Swedish Installation Federation, Sweden)

Nicolas Raynaud (Vice President, Innovation Europe at Schneider Electric, France)

Smart Meters: the gateway to user-centric energy services *Kilimandjaro 1-2*

SPECIAL SESSION

Many European countries have already transitioned to or are in the process of deploying a fully connected and bidirectional metering infrastructure. This transformation in the energy metering and billing systems is the result of several years of European legislation. These efforts aim to increase the system's overall efficiency, liberalize the energy market, and promote the active participation of consumers.

Unfortunately, how intelligent metering infrastructures or "smart meters" contribute towards the last goal, namely, the active participation of consumers, is still unclear nowadays. Even though the third energy package of the European Union already stated that "Member States shall ensure the implementation of intelligent metering systems that shall assist the active participation of consumers in the electricity supply market." smart meters remain mostly as billing tools that only seem to provide tangible benefits to the upstream stakeholders, i.e., distribution and transmission system operators (DSO/TSO).

Given the current energy context and the goal of a user-centric energy transition set in the "Clean Energy for all European" package in 2019, it is important to focus on the direct benefits end-users can reap from smart metering systems.

The aim of this panel is to discuss the challenges, developments, and research opportunities in the following areas, where smart metering infrastructures can play a crucial role.

1. Energy-as-a-service business models: Use of smart meters in new paradigms such as peer-to-peer trading in renewable and citizen energy communities, as well as tools for energy service providers (ESP) to measure and value users' flexibility.

2. Increasing energy efficiency and awareness: Characterization of behind-the-meter consumption patterns, evaluation of flexibility potential without expensive sub-metering, and close-to-real-time user feedback.

3. Enhancing users' trust in smart meters: Cybersecurity and privacy-preserving techniques to protect user data not only during storage and transmission but also when these data need to be processed by third parties.

Moderated by: Dr. Emilio José Palacios-García (Postdoctoral Research Fellow at KU Leuven/EnergyVille, Belgium)

Panelists:

Prof. Geert Deconinck (KU Leuven/EnergyVille, Belgium): "Extending the Flemish Smart Meter for Privacy-Friendly Energy Trading"

Nikolaos Efkarpidis (Software Product Manager at Secure Switzerland AG, Switzerland): "Smart Meter Applications - Main Concepts and Business Models"

Dr. Barry Hayes (Assoc. Prof. at Univ. College Cork, Ireland): "User-centric Energy Services from Smart Meters: Research and Industry Experiences from Ireland"

Dr. Mustafa Mustafa (Senior Lecturer at Univ. of Manchester, UK): "Privacy-Friendly Smart Meter Applications"

Sandro Iacovella (Founder and CEO of ThermoVault, Belgium): "The Opportunities of Smart Metering for Energy Services Companies in the Residential Sector"

Roadmap of Innovating with AI for Distribution Grids   *Kilimandjaro 3-4*

INDUSTRY PANEL SESSION

The panel explores the transformative potential of artificial intelligence (AI) technologies in modernizing distribution grids and discusses a roadmap for their implementation. The panelists will delve into various applications of AI in distribution grids, such as empowering the grid edge, AI-assisted flexibility provision, outage prediction, enhancing distribution network planning, and integrating AI research into Distribution System Operators (DSOs). By presenting practical use cases and insights, the panel aims to create a coherent roadmap for the effective integration of AI in distribution grids, paving the way for a decarbonized and resilient energy future. Attendees will gain valuable insights into the latest trends, emerging technologies, and potential challenges, fostering a collaborative environment to shape the future of intelligent energy systems guided by the proposed roadmap.

Moderated by: Dr. Jochen L. Cremer (Delft Univ. of Technology, Netherlands)

Panelists:

Yingchen Zhang (Utilidata, USA): "Empowering the Grid Edge with AI"

Federica Bellizio (Swiss Federal Laboratories for Materials Science and Technology, Switzerland): "AI-assisted flexibility provision in distribution grids: building and e-mobility"

Dr. Daniel Donaldson (Univ. of Birmingham, UK): "AI-Based Outage Prediction for Distribution Network Operators"

Dr. Pedro Vergara Barrios (Delft Univ. of Technology, Netherlands): "Enhancing Distribution Networks Planning using AI"

Werner van Westering (Alliander, Netherlands): "Integrating AI Research into the DSO"

Sponsor Panel Session Schneider Electric: Are we implementing flexibility initiatives effectively with right framework and technologies ?

Auditorium

SPONSOR PANEL SESSION

Nobody needs a crystal ball to see that transport and industrial process electrification, or the scaling of renewable generation and storage will help decarbonize our future.

Equally clear is the challenge in connecting all those new assets to MV and LV grids, which were never designed for all that.

For electric companies to survive energy transition, reducing the complexity of this revolution is the top priority. It's time to retire the wire-centric approach and deploy smarter solutions to manage both grid and grid-connected assets.

How? That's where flexibility comes in. On the surface, flexibility services are valued for their ability to mitigate network constraints defer capex investment.

But we quickly arrive at more difficult questions, such as "How to implement flexibility?" and "who should be involved?"

Join this panel to see what an agile implementation of flexibility services can bring, when approached holistically and with attention to each level: institutional, market, and technical standards.

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Join this panel to see what an agile implementation of flexibility services can bring, when approached holistically and with attention to each level: institutional, market, and technical standards.

Moderated by: Régis Le Drézen (Think Smartgrids Managing Director)

Panelists:

Alexis Grenon (SVP Digital Grid at Schneider Electric)

Shay Bahramirad (IEEE PES & LUMA Electric Utility, Puerto Rico)

Vincent Bassle (ENEDIS)

Michel Bena (RTE R&D Deputy Director)

Microsoft - tbc

Flexible energy communities: hype or reality? How to equip communities so they can support the electricity system and connect to the broader smart grid economy?

Kilimandjaro 1-2

INDUSTRY PANEL SESSION

Energy communities are at the forefront of the transition to sustainable energy systems. This panel session explores the pivotal role of open source digital tools in supporting the development and success of energy communities in the European Union. It delves into the legal aspects and definitions of Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs) and the crucial need for flexibility services in the evolving energy landscape. The session also provides an overview of the REScoopVPP solution and the ecosystem of cooperatives involved, illustrating the practical application of these concepts.

Moderated by: Roland Tual (Project Manager at REScoop.eu)

Panelists:

Roland Tual (Project Manager at REScoop.eu) and Vincent Dierickx (Co-founder and President of EnergieID): "Setting the scene: energy communities, flexible services and open source digital tools"

Matt Fawcett (Co-founder of The Carbon Co-op) and Joannes Laveyne (Researcher at Electrical Energy Lab, Gent Univ., Belgium): "Making home smart: devices interoperability and home automation"

Jan Pecinosky (Data scientist at EnergieID) and Clément Jeannesson (Data Engineer at Enercoop): "Equipping communities with flexibility solutions"

Jairo Echavez or Christian Weingartner (Project Manager at The Carbon Co-op) and Ine Swennen (Project Manager at Ecopower): "Cooperatives offering flexibility services to citizens"

Women in Engineering: The challenges of diversity to achieve the Energy Transition together; examples of good practice and the need to amplify efforts

Kilimandjaro 3-4

IEEE PANEL SESSION

After a short presentation by each of the speakers, allowing them to express their vision of diversity issues, the panel will aim to illustrate them with concrete examples, share best practices, and identify the efforts needed to amplify the presence of women in energy and the visibility of their achievements and successes.

Moderated by: Dr Yousra Sidqi (Senior researcher at IEE HLSU / IEEE CH / Chair IEEE PES WiP CH, Switzerland) and Claire Lajoie-Mazenc (Senior Scientific Counselor at RTE / past-President F.IEEE / F.CIGRE, France)

Panelists:

Dr. Marie-Cécile Alvarez-Hérault (Assoc. Prof. at Grenoble INP | Univ. Grenoble Alpes, France)

Alexia Venet Jalade (Trainer at RTE / Chair CIGRE Next Generation Network, France)

Florence Sedes (IRIT / Chair WiE IEEE)

Vera Silva (CTSO GE / IEEE PES France)

Laurie-Anne Clément Charpentier (Head of Commercial Sales and Tender at Grid Solutions Siemens Energy SAS)

Elisabeth Da Silva Domingues (Head of Laboratory and testing at Hitachi Energy)

Sponsor Panel Think Smart Grids: Development of Electrical Flexibility in France

Auditorium

SPONSOR PANEL SESSION

The development of electrical flexibility will become a major issue in France over the next few years. In addition to the major investment needed in electricity networks, the growth of renewable energy sources and the electrification of energy use will require more precise management of consumption and production to optimize the electricity system. Smart grid technologies are the answer. On this panel, a DSO and a TSO will explain the tools they are using to develop flexibility on a massive scale in their territories. Their experience will be complemented by contributions from three start-ups, all of which have developed technologies and know-how to meet the need for large-scale development of flexibility. Finally, the chairman of a research funding and promotion agency will highlight the existing scientific cooperation between France and India to develop practical flexibility solutions. The round table will be moderated by Wavestone, a member of Think Smartgrids, in support of the association's efforts to develop flexibility on an industrial scale in France.

Moderated by: Clément Le Roy (Senior Manager at Wavestone)

Panelists:

Pamela Catrinque (PMO of Flexibilities Projects in Electrical Distribution Network – Smart Grids at Enedis, France)

Prof. Nitin Seth (President of CEFIPRA)

Guillaume Louat (Co-Founder of Tilt)

Fabien Berger (Co-Founder and CEO of Fractal Energy, France)

Léo-Paul Keyser (Co-CEO of Izaac)

Contemporary and emergent methods for planning and analysis of distribution networks   *Kilimandjaro 1-2*

SPECIAL SESSION

Widespread electrification will result in distribution networks becoming a crucial bottleneck on the path to a resilient and carbon-neutral power system, and new approaches must be developed to enable network planners to achieve net zero goals in a reliable, cost-effective, and timely manner. This Special Session will consider emerging challenges and options for distribution system planners, including novel planning frameworks, new AC/DC distribution architectures, climate and weather risks, and the necessity of ensuring a fair and just transition. This Special Session is sponsored by the IEEE Modern and Future Distribution System Planning Working Group (IEEE MFDSP WG).

Moderated by: Dr. Matthew Deakin (Royal Academy of Engineering Research Fellow at Newcastle Univ., UK)

Panelists:

Dr. Marie-Cecile Alvarez-Hérault (Assoc. Prof. at Grenoble INP | Univ. Grenoble Alpes, France): "Perspectives on distribution network planning practices in the context of a high penetration of distributed energy resources"

Dr. Davis Montenegro (Technical Leader at EPRI): "Advancing Utility Business Models through Dynamic Distribution Planning"

Dr. Daniel Donaldson (Assist. Prof. at Univ. of Birmingham, UK): "Embedding Consideration of Weather and Climate Hazards in Distribution System Planning Processes"

Dr. Barry Hayes (Assoc. Prof. at Univ. College Cork, Ireland): "Sharing the Grid: The Challenge of Fairness in Future Electricity Distribution Networks"

Dr. Martha Symko-Davies (Laboratory Program Manager for Energy Systems Integration, NREL, USA): "Accelerate jurisdictions' ambitions to energy transitions—future replicable models that achieve just, clean energy systems"

Start-up Panel Session

Everest

START-UP PANEL SESSION

This session is devoted to startups associated with the ISGT Europe conference. The presentations will show the current level of development and the projects they have in their portfolios.

Moderated by:

Panelists:

Roseau Technologies

Olivier Constant (OmégaWatt): "From detailed load monitoring to LV network optimization"

Nathalie Desbrosses (Steadysun): "Steadysun: solar and wind energy forecasting"

Dimitri Tainoff (Moïz-eh): "Self powered and versatile measurement modules for the monitoring of industrial processes and infrastructures : the case of electrical transport"

Cornel Ioana (Altrans): "Early warning identification of weaknesses in power cables using AI-based analysis of transient phenomena"

Sellé Toure (Ikattan): Ikadips, a web-based tool to automate the Variable Renewable Energies (VRE) grid integration studies

ORAL SESSIONS

Power Flow & Optimal Power Flow   *MontBlanc 1-2*

PAPER PRESENTATION

Chair : Prof. Jens Haubrock (Univ. of Applied Sciences and Arts of Bielefeld, Germany)

A8876HZ
Modelling and Validation of Electric Vehicle Battery Chargers for Power Flow and Harmonic Studies
Haroon Zafar (1) (presenting author), As'ad Zakaria (1), Sasa Djokic (1)
1 University of Edinburgh, Edinburgh, United Kingdom

A8713OR
Network Distribution Constraints Optimisation Algorithm - An Australian Case Study
Osaka Rubasinghe (1) (presenting author), Tingze Zhang (1), Tyrone Fernando (1), Peter Howe (2), Xinan Zhang (1),
Herbert Ho-Ching Iu (1)
1 The University of Western Australia, Perth, Australia
2 Western Power, Perth, Australia

A8739RS
Learning to Predict Security Constraints for Large-Scale Unit Commitment Problems
Rafael Sterzinger (1) (presenting author), Jan Poland (2), Max B. Paulus (1), Didier Chételat (3)
1 ETH Zürich, Zürich, Switzerland
2 Hitachi Energy Research, Baden-Dättwil, Switzerland
3 Polytechnique Montréal, Montréal, Canada

A8716IV
Scalable Bilevel Optimization for Generating Maximally Representative OPF Datasets
Ignasi Ventura Nadal (1) (presenting author), Samuel Chevalier (1)
1 Technical University of Denmark, Kongens Lyngby, Denmark

A9147GP
Dynamic Weight Enabled Physics-Aware Graph
Attention Network For Power Flow Analysis
Garima Prashal (1) (presenting author), P. Sumathi (1), Narayana Prasad Padhy (1)
1 IIT Roorkee, Roorkee, India

Distributed Optimal Power Flow for VSC-MTDC Meshed AC/DC Grids Using ALADIN

Junyi Zhai (1), Xinliang Dai (2) (presenting author), Yuning Jiang (3), Ying Xue (4), Veit Hagenmeyer (2), Colin Jones (3), Xiao-Ping Zhang (5)

1 China University of Petroleum, Qingdao , China

2 Karlsruhe Institute of Technology, Karlsruhe, Germany

3 Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

4 South China University of Technology, Guangzhou, China

5 University of Birmingham, Birmingham, United Kingdom

TSO-DSO interactions

MontBlanc 3-4

PAPER PRESENTATION

Chair : Prof. Gianfranco Chicco (Politecnico di Torino, Italia)

A8751DV

Probabilistic Data-driven Nodal Voltage Forecasting considering Active Distribution Networks

Dawn Virginillo (1) (presenting author), Stavros Karagiannopoulos (1)
1 Swissgrid AG, Aarau, Switzerland

A8849XX

Development of a Dynamic Hybrid Meshed AC/DC Transmission Grid for Studying Small-signal Rotor Angle Stability

Chang You (1), Xiong Xiao (1) (presenting author), Chengxiao Shen (1), Soham Choudhury (1), Jutta Hanson (1)
1 Department of Electrical Power Supply with Integration of Renewable Energy (E5), Technical University of Darmstadt, Darmstadt, Germany

A8977CJ

Distributed Flexibility Estimation for TSO-DSO Interactions

Corentin Jacquier (1) (presenting author), Rémy Rigo-Mariani (1), Vincent Debusschere (1), Jean-Nicolas Louis (2), Silvana Mima (3)
1 G2Elab, Grenoble, France
2 VTT, Espoo, Finland
3 GAEL, Grenoble, France

A9035SA

Comparison of Heuristic Optimization-Based Methods for Determining the Flexibility Potential at Vertical System Interconnections

Sharaf Alsharif (1) (presenting author), Marcel Sarstedt (2), Eric MSP Veith (3)
1 OFFIS e.V., Oldenburg, Germany
2 Leibniz Universität Hannover, Institute of Electric Power Systems, Hannover, Germany
3 Carl von Ossietzky University Oldenburg, Oldenburg, Germany

A8741LS

Determination of Interdependent Feasible Operation Regions at Multiple TSO-DSO Interconnections

Lars Stark (1) (presenting author), Marcel Sarstedt (1), Lutz Hofmann (1)
1 Institute of Electric Power Systems - Electric Power Engineering Section, Leibniz Universität Hannover, Hanover, Germany

A8846SY

Robust Fault Detection and Characterisation in AC Microgrids using Ensemble Empirical Mode Decomposition

Satyavarta Kumar Prince (1), Seifeddine Ben Elghali (2), Affijulla Shaik (1), Gayadhar Panda (1) (presenting author)
1 NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA, SHILLONG, India
2 AIX-Marseille University, Marseille, France

Model reduction   *Everest*

PAPER PRESENTATION

Chair : Dr. Andrea Michiorri (Assoc. Prof. at Mines Paris, PSL University, France)

A9072YB

Aggregation and Profit Allocation Models for Distributed Energy Resources Aggregator

Smita Lokhande (2), Yogesh Kumar Bichpuriya (1) (presenting author), Venkatesh Sarangan (3), Narayanan Rajagopal (4)
1 TCS Research, Tata Consultancy Services Ltd., Pune, India
2 TCS Research, Tata Consultancy Services Ltd., Mumbai, India
3 TCS Research, Tata Consultancy Services Ltd., Chennai, India
4 TCS Research, Tata Consultancy Services Ltd., Bengaluru, India

A9138JS

Applying Vector Fitting for Measurement-based Multiple-Input Multiple-Output Model Identification of a Grid Forming Converter

Lisa Reis (2,3) (presenting author), Andrew Macmillan Smith (1), Salvatore D'Arco (1), Jon Are Suul (1,2)
1 SINTEF Energy Research, Trondheim, Norway
2 Department of Engineering Cybernetics, Norwegian University of Science and Technology, Trondheim, Norway
3 Technical University of Kaiserslautern, Kaiserslautern, Germany

A9107YW

A Projection-Based Approach for Distributed Energy Resources Aggregation

Yiran Wang (1) (presenting author), Haiwang Zhong (2), Guangchun Ruan (3)
1 Tsinghua Universty, Beijing, China
2 Tsinghua Universty, Beijing, China
3 Massachusetts Institute of Technology, Boston, United States

A8920MA

Application of the State-Relevance Method to Calculation of Reduced Order Models of Virtual Power Plants

Marco Vinicio Avendano-Caiza (1,2) (presenting author), Javier Roldan-Perez (1), Milan Prodanovic (1), Rodriguez-Amenedo Jose Luis (2)
1 IMDEA Energy, Mostoles, Spain
2 Carlos III University, Leganes, Spain

A9073NK

Model Reduction Method for Distribution System Including Smart Inverters with Grid-Forming Droop Control

Nobuaki Kawashima (1) (presenting author)
1 Hokkaido University, Sapporo, Japan

A Low-Order Steady-State Model of Electric Springs for Conservation Voltage Reduction in Active Distribution Networks with Renewables

Jian Wang (1) (presenting author), Keng Weng Lao (2), Ningyi Dai (2), Haoming Liu (1), Yuan Chi (3), Qianggang Wang (3), Yonghua Song (2)

1 Hohai University, Nanjing, China
2 University of Macau, Macau, China
3 Chongqing University, Chongqing, China

HVDC and MMC   *Makalu*

PAPER PRESENTATION

Chair : Prof. Lina Bertling Tjernberg (KTH, Sweden)

A8747FX

Non-unit DC Line Protection Method for Multi-terminal MMC-HVDC System Based on Normalized Backward Traveling Waves

Fan Xie (1,2), Le Liu (2) (presenting author), Marjan Popov (2), Zhiguo Hao (1), Aleksandra Lekic (2)
1 State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China
2 Faculty of Electrical Engineering, Mathematics & Computer Science, Delft University of Technology, Delft, Netherlands

A8865KH

A Modeling Approach for MVDC Grid Planning and Evaluation of the Design Parameters

Katharina Hetzenecker (1) (presenting author), Tim Karsten (1), Jan Mathé (1), Rik W. De Doncker (1)
1 Institute for Power Generation and Storage Systems, E.ON Energy Research Center, RWTH Aachen University, Aachen, Germany

A8980XL

Comparison of Control Structures for Fault Current Injection and Energy Balancing in MMC-HVDC

Xiaoxiao Liu (1,2,3) (presenting author), Paul Judge (3), Leterme Willem (1,2), Dirk Van Hertem (1,2)
1 dept. of Electrical Engineering, KU Leuven, Leuven, Belgium
2 EnergyVille, Genk, Belgium
3 School of Engineering, University of Edinburgh, Edinburgh, United Kingdom

A8857LB

Voltage Support and Electrical Stresses in MMC-HVDC Systems during AC Faults

Lucas Bex (1,2) (presenting author), Xiaoxiao Liu (1,2,3), Willem Leterme (1,2), Paul Judge (3), Dirk Van Hertem (1,2)
1 KU Leuven, Leuven, Belgium
2 EnergyVille, Genk, Belgium
3 University of Edinburgh, Edinburgh, United Kingdom

A8807FP

Study of Low-Frequency Interactions between Grid-Forming MMCs located on both sides of a Bipolar HVDC link

Francesco Giacomo Puricelli (1,2) (presenting author), Rault Pierre (3), Carmen Cardozo (4), Jef Beerten (1,2)
1 KU Leuven, Leuven, Belgium
2 EnergyVille, Genk, Belgium
3 Réseau de Transport d'Electricité (RTE) - CNER, Paris La Defense, France
4 Réseau de Transport d'Electricité (RTE) - R&D, Paris La Defense, France

Artificial intelligence 1

MontBlanc 1-2

PAPER PRESENTATION

Chair : Dr. Mònica Aragüés Peñalba (Assoc. Prof. at UPC Barcelona, Spain)

A8904fN
A Comparison of Various Deep Learning Methods for Household Load Forecasting
Karthikeyan Deivamani (1), Farshid Norouzi (1) (presenting author), Aditya Shekhar (1), Povel Bauer (1)
1 TUdelft, delft, Netherlands

A8996MH
Machine Learning-Based Forecasting of the Automatic Frequency Restoration Reserve Demand
Martin Henych (1) (presenting author), Mamula Ondrej (1), Sovka Pavel (1), S˚ucha Premysl (1)
1 Czech Technical University in Prague, Prague, Czechia

A8917KK
Automatic Load Management in Active Distribution Grids Using Reinforcement Learning
Eleni Stai (1), Katharina Kaiser (1) (presenting author), Josua Stoffel (1), Marina Gonzalez Vaya (2), Gabriela Hug (1)
1 ETH Zurich, Zurich, Switzerland
2 Elektrizitätswerke des Kantons Zürich (EKZ), Zurich, Switzerland

A9231ZK
Adaptive Activation Functions for Deep Learning-based Power Flow Analysis
Zeynab Kaseb (1) (presenting author), Yu Xiang (2), Peter Palensky (1), Pedro P. Vergara (1)
1 Delft University of Technology, Delft, Netherlands
2 Alliander N.V., Arnhem, Netherlands

A8947XY
Application of Machine Learning and Hyper-Parameter Optimisation for Efficient Prediction of Transient Stability
Xinlin Ye (1) (presenting author), Jovica V. Milanovic (1)
1 The University of Manchester, Manchester, United Kingdom

Applications on real case study 1   *MontBlanc 3-4*

PAPER PRESENTATION

Chair : Prof. Tuan Quoc Tran (CEA, France)

A8604

Assesment of Supraharmonic Injections in Turkish Distribution Systems

Özgür Arda Küçükaslan (1), Ayse Nur Önder Erkan (2), Kaya Kerim (3), Caner Özen (3), Büsra Büyükbas (3), Nafiz Özcan (2), Tuba Avsar (3), Pertev Cinalioglu (2), Arsalan Bayatmakoo (3), Murat Göl (1) (presenting author)
1 Department of Electrical & Electronics Engineering, Middle East Technical University, Ankara, Turkey
2 ENTT Energy, Ankara, Turkey
3 Yesilırmak EDAS, Samsun, Turkey

A8793FH

What drives electricity tariffs in Switzerland? Two-stage statistical and geospatial analysis of structural differences across 1913 municipalities

Noemie Jeannin (2), Yael Frischholz (2), Fabian Heymann (1) (presenting author), Pablo Duenas (3)
1 Swiss Federal Office for Energy, Bern, Switzerland
2 EPFL, Lausanne, Switzerland
3 Massachusetts Institute of Technology, Cambridge (MA), United States

A8656GG

Modelling and simulating new power grid control architectures

Mathilde Arnaud (2), Arnault Lapitre (2), Yves Lhuillier (2), Stéphane Salmons (2), Asma Smaoui (1), Guillaume Giraud (1) (presenting author), Arnaud Guerrier (1)
1 RTE, Paris, France
2 Université Paris-Saclay, CEA, List, Palaiseau, France

A8736TR

Controlling Microgrids Without External Data: A Benchmark of Stochastic Programming Methods

Alban Puech (1) (presenting author), Tristan Rigaut (1), Adrien Le Franc (2), William Templier (1), Jean-Christophe Alais (1), Maud Tournoud (1), Alejandro Yousef (1), Elena Stolyarova (1)
1 AI Hub - Schneider Digital - Schneider Electric, Grenoble, France
2 LAAS - CNRS, Toulouse, France

A9104FH

Regulating Artificial Intelligence in the EU, United States and China - Implications for energy systems

Fabian Heymann (1) (presenting author), Konstantinos Parginos (2), Ali Hariri (3), Gabriele Franco (4)
1 Swiss Federal Office for Energy, Bern, Switzerland
2 MINES Paris, PSL University, Sophia Antipolis, France
3 Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland
4 PANETTA Law Firm, Rome, Italy

Co-Simulation of real-time and offline power system models: An application example

Yuyao Feng (1), Xuejun Xiong (1), Christian Scheibe (2) (presenting author), Hanzhong Wang (2), Piergiovanni La Seta (2), Holger Müller (2)

1 State Grid Shanghai Municipal Electric Power Company, Shanghai, China
2 Siemens AG, Erlangen, Germany

Distribution networks sizing and planning

Everest

PAPER PRESENTATION

Chair : Dr. Marie-Cécile Alvarez Hérault (Assoc. Prof. at Grenoble INP | Univ. Grenoble Alpes, France)

A9220VV

Python-Based Planning Tool for LVAC Rural Electrification: Cluster Phase Balancing and Radial Topology

Vannak Vai (1), Marie-Cécile Alvarez-Hérault (2) (presenting author), Bertrand Raison (2)
1 Institute of Technology of Cambodia, Phnom Penh, Cambodia
2 Univ. Grenoble Alpes, CNRS, Grenoble INP, G2Elab, Grenoble , France

A8818YA

Agglomerative Hierarchical Clustering Applied to Medium Voltage Feeder Hosting Capacity Estimation

Yassine Abdelouadoud (1) (presenting author), Robin Girard (1), Sébastien Vallet (2)
1 Mines Paris, Sophia Antipolis, France
2 Roseau Technologie, Grenoble, France

A8765MW

Approach on Active Distribution Grid Planning by Using the Feasible Operation Region

Manuel Wingenfelder (1) (presenting author), Marcel Sarstedt (1), Lutz Hofmann (1)
1 Leibniz University Hannover, Institute of Electric Power System, Electric Power Engineering Section, Hanover, Germany

A9049GB

A one-leader multi-follower approach to distribution network development planning

Geoffrey Bailly (1) (presenting author), Manon Cornet (1), Mevludin Glavic (1), Bertrand Cornélusse (1)
1 University of Liège, Liege, Belgium

A9074FT

Increasing Hosting Capacity of Uncontrollable Distributed Energy Resources in Isolated Power Systems

Fivos Therapontos (1,2), Andreas Stavrou (3) (presenting author), Petros Aristidou (4)
1 University of Cyprus, Nicosia, Cyprus
2 Distribution System Operator - Electricity Authority of Cyprus, Nicosia, Cyprus
3 Transmission Network Owner - Electricity Authority of Cyprus, Nicosia, Cyprus
4 Cyprus University of Technology , Limassol, Cyprus

A8899AA

Stochastic Capital Budgeting of Microgrid Projects Under Electricity Market Uncertainty

Amin Khodaei (1), Ali Arabnya (1) (presenting author)
1 University of Denver, Denver, Colorado , United States

Batteries for the power system 1   *Makalu*

PAPER PRESENTATION

Chair : Dr. Atri Bera (Energy Storage Tech. & Systems at Sandia National Laboratories, USA)

A8942FM
Energy Optimization Controllers for Residential Peak Load Shaving and Cost Minimization
Felicitas Mueller (1) (presenting author), Steven de Jongh (1), Claudio Canizares (2), Thomas Leibfried (1), Kankar Bhattacharya (2)
1 Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany
2 University of Waterloo (UoW), Waterloo, Canada

A8842AP
Optimal Battery Charge Scheduling For Revenue Stacking Under Operational Constraints Via Energy Arbitrage
Alban Puech (2,3) (presenting author), Gorazd Dimitrov (2), Claudia D'Ambrosio (1)
1 LIX CNRS, École polytechnique, Institut Polytechnique de Paris, Palaiseau , France
2 Institut Polytechnique de Paris, Palaiseau, France
3 DEIF Wind Power Technology, Klagenfurt, Austria

A8642KM
Linear Approximation of Calendar Battery Aging Costs for MILP-Based Power Dispatch Optimization
Kurt Majewski (1) (presenting author), Martin Seydenschwanz (1), Corinna Gottschalk (1), Sonja Weiland (2)
1 Siemens AG, T DAI ORD-DE, Munich, Germany
2 Technische Universität München, Munich, Germany

A8998KH
Control of distributed energy storage systems for minimum reverse flow in a distribution grid with high share of photovoltaic
Katrin Handel (1) (presenting author), Katrin Schulte (1), Rémy Rigo-Mariani (2), Jens Haubrock (1), Jan Arens (3)
1 University of Applied Sciences and Arts Bielefeld, Bielefeld, Germany
2 University Grenoble Alpes, Grenoble, France
3 Westfalen Weser Netz GmbH, Paderborn, Germany

A8803TG
Method to embed behavioral battery model in predictive Energy Management System
Axel Sutter (1), Tomasz T. Gorecki (1) (presenting author), Shubham S. Bhoir (1)
1 CSEM Sustainable Energy Center, Neuchatel, Switzerland

A9115AK
PINN with Memory: A Novel Methodology for State of Charge Estimation of Lithium-ion Batteries Under Dynamic Load Profile
Ali Kharal (1) (presenting author), Ijaz Naqvi (1), Naveed Arshad (1)
1 Lahore University of Management Sciences, Lahore, Pakistan

Electric vehicles 1   *Auditorium*

PAPER PRESENTATION

Chair : Prof. Marc Petit (CentraleSupelec, France)

A8665JS

Optimal Planning of Autonomous Electric Vehicles Charging Stations with Photovoltaic Generations and Energy Storage Systems in Electric Distribution Systems

Tayenne Dias de Lima (3), Haider Ali (2) (presenting author), João Soares (1,4), John F. Franco (3), Bruno Francois (2), Luce Brutcorne (5)
1 GECAD, Polytechnic of Porto, Porto, Portugal
2 Laboratoire d'Électrotechnique et d'Électronique de Puissance (L2EP), Ecole Centrale de Lille, Villeneuve d'Ascq, France
3 Department of Electrical Engineering, São Paulo State University (UNESP), Ilha Solt

A8641LW

Integrating Guarantees and Veto-Buttons into the Charging of Electric Vehicles at Office Buildings

Leoni Winschermann (1) (presenting author), Gerwin Hoogsteen (1), Johann Hurink (1)
1 University of Twente, Enschede, Netherlands

A9048JK

Controller design and measurement selection for dynamic load curtailment at a charging site

Jonatan Ralf Axel Klemets (1) (presenting author), Tim Unterluggauer (2), Bendik Nybakk Torsæter (1)
1 SINTEF Energy Research, Trondheim, Norway
2 Technical University of Denmark, Copenhagen, Denmark

A9008YM

A Design of Smart Charging Architecture for Battery Electric Vehicles

Riza Riza (2) (presenting author), Yusuf Margowadi (1), Prasetyo Aji (1), Eka Rakhman Priandana (1), Eka Nurdiana (1), Dwidharma Priyasta (3), Estiko Rijanto (4), Feri Yusivar (2)
1 Research Center for Conversion and Conservation Energy National Research and Innovation Agency (BRIN), Tangerang Selatan, Indonesia
2 Universitas Indonesia, Depok, Indonesia
3 Research Center for Electronics National Research and Innovation Agency (BRIN

A9019AD

Optimal Pricing for Electric Vehicle Parking Duration under Uncertainty

Alix Dupont (1,2) (presenting author), Yezekael Hayel (1), Tania Jiménez (1), Jean-Baptiste Breal (2), Raphaël Payen (2), Olivier Beaude (2)
1 Avignon university, Avignon, France
2 EDF lab, Paris-Saclay, France

Optimal EV Allocation and Charging within Parking Lots Using a Local Marginal Pricing Mechanism

Nataly Bañol Arias (1) (presenting author), Juan Sebastián Giraldo (2), Juan Camilo López (3), Gerwin Hoogsteen (1), Johann Hurink (1)

1 University of Twente, Enschede, Netherlands
2 Netherlands Organization for Applied Scientific Research (TNO), Amsterdam, Netherlands
3 State University of Campinas (UNICAMP), Campinas, Brazil

Artificial intelligence 2   *MontBlanc 1-2*

PAPER PRESENTATION

Chair : Dr. Hussain Syed Kazmi (Assist. Prof. at KU Leuven, Belgium)

A9088TJ

Comparison of Different Machine Learning Models for Short-Term Load Forecasting at Transformer Level with High Amounts of Photovoltaic Generation

Timon Jungh (1) (presenting author), Bastian Steinhagen (1), Katrin Schulte (2), Marc Hesse (1)
1 Cognitronics and Sensor Systems, University of Bielefeld, Bielefeld, Germany
2 Institute for Technical Energy Systems, University of Applied Sciences and Arts Bielefeld, Bielefeld, Germany

A8749EA

Energy Market Predictions with Hybrid Neural Network 1D-CNN-BiGRU

Edvard Avdevicius (1) (presenting author), Mina Eskander (1), Detlef Schulz (1)
1 Helmut Schmidt University / University of the Federal Armed Forces Hamburg, Hamburg, Germany

A8621MB

Deep attention convolutional neural network-based adaptive multi-source information fusion for accurate short-term photovoltaic power forecast

Mingliang Bai (1) (presenting author), Yunxiao Chen (1), Zhihao Zhou (1), Zhenhua Long (1), Jinfu Liu (1), Daren Yu (1)
1 Harbin Institute of Technology, Harbin, China

A8678YH

A Deep CNN-LSTM Model Tuned by PPSO for Spatiotemporal Solar GHI Forecasting

Ying-Yi Hong (1), Christian Lian Paulo Perez Rioflorido (1) (presenting author)
1 Chung Yuan Christian University, Taoyuan, Taiwan

A8687AA

Combinatorial Auctions and Graph Neural Networks for Local Energy Flexibility Markets

Awadelrahman M. A. Ahmed (1) (presenting author), Frank Eliassen (1), Yan Zhang (1)
1 University of Oslo, Oslo, Norway

A9029NY

Reconfigure Distribution Network with Physics-informed Graph Neural Network

Jingtao Qin (1), Nanpeng Yu (1) (presenting author)
1 University of California, Riverside, Riverside, United States

Applications on real case study 2   *MontBlanc 3-4*

PAPER PRESENTATION

Chair : Prof. Oriol Gomis (Technical Univ. of Catalonia, Spain)

A8843WY
Optimising multi-factor assistance in a deep learning-based electricity forecasting model with climate resilience: an Australian case study
Weijia Yang (1) (presenting author), Sarah Sparrow (1), David Wallom (1)
1 University of Oxford, Oxford, United Kingdom

A9043YF
How Network Tariffs Impact the Optimal Design of Local Energy Systems: A Swiss Case Study
Yamshid Farhat (1,2) (presenting author), Gabriel Mihai Lipsa (1), Torsten Braun (2)
1 BKW Energie AG, Bern, Switzerland
2 University of Bern, Bern, Switzerland

A9038AK
On the Sequential Reserve Dimensioning for a Multi-Area Power System: Nordic Case Study
Abolfazl Khodadadi (1) (presenting author), Henrik Nordström (1), Lennart Söder (1)
1 KTH Royal Institute of Technology, Stockholm, Sweden

A8901fN
Economic Impact of New Pricing Policies on Solar PV Households in the Netherlands
farshid Norouzi (1) (presenting author), Aditya Shekhar (1), Thomas Hoppe (1), Pavol Bauer (1)
1 TUdelft, delft, Netherlands

A8786FS
Mobile Hydrogen Refueling Station: A Case Study of H2 E-Mobility on Ouessant Island
Fahad ali SARWAR (1) (presenting author), Ignacio HERNANDO GIL (1), Ionel VECHIU (1), Stephane LATIL (1), ilies DRISS (1)
1 H2gremm, ESTIA, Quimper, France

A8891AD
Potential Impact of Electric Vehicles Connected to the Grid- A Pre-Study for the Swedish Power System
Arundhati Dogra (1) (presenting author), Lina Bertling Tjernberg (1)
1 KTH Royal Institute of Technology, Stockholm, Sweden

Heat pumps for the grid   *Everest*

PAPER PRESENTATION

Chair : Prof. Gayadhar Panda (National Institute of Technology, Meghalaya, India)

A8811GR
Medium-term impact of daily heat pump load profiles to forecast congestion of distribution network assets
George Rouwhorst (1) (presenting author), Phuong H. Nguyen (1), Slootweg Han (1,2)
1 Eindhoven University of Technology, Eindhoven, Netherlands
2 Enexis Netbeheer, 's-Hertogenbosch, Netherlands

A8832LB
Seasonal Performance of Fitted Q-iteration for Space Heating and Cooling with Heat Pumps
Lucas Bex (1,2) (presenting author), Thijs Peirelinck (1,2), Geert Deconinck (1,2)
1 KU Leuven, Leuven, Belgium
2 EnergyVille, Genk, Belgium

A9011MB
Impact of Heat Pump Electrification in Distribution Grids through a Socio-technical Approach
Matteo Barsanti (1) (presenting author), Debopama Sen Sarma (2), Claudia Binder (1), Christian Rehtanz (2)
1 Laboratory on Human-Environment Relations in Urban Systems, EPFL, Lausanne, Switzerland
2 Institute of Energy Systems, Energy Efficiency and Energy Economics, TU Dortmund, Dortumnd, Germany

A8894CM
Clustering methods to select representative days for heat pumps optimal operation accounting for electricity grid constraints
Célia Masternak (1) (presenting author), Cécile Begassat-Piquet (1), Clémence Lévêque (1), Simon Meunier (1), Vincent Reinbold (1), Dirk Saelens (3,4), Claude Marchand (1)
1 Université Paris-Saclay, CentraleSupélec, Sorbonne University, CNRS, GeePs, Gif-sur-Yvette, France
2 CentraleSupélec, Gif-sur-Yvette, France
3 KU Leuven, Dept. of Civil Eng., Building Physics Sustainable Design, Leuven, Belgium
4 EnergyVille, Genk, Belg

A9082RA
Electrolyzers Heat Capture Study for a Wind Farm
Ramin Ahmadi Kordkheili (1) (presenting author), Reza Ahmadi Kordkheili (2), Matti Lehtonen (1), Mahdi Pourakbari-Kasmaei (1)
1 Aalto University, Espoo, Finland
2 Vattenfall vindkraft A/S, Kolding, Denmark

On the impact of heat pump installations and peak blocking strategies on grid expansion costs

Leo Semmelmann (1) (presenting author), Schmid Daniel (1), Sarah Henni (1), Anya Heider (2,3), Birgit Schachler (2), Christof Weinhardt (1)

1 Karlsruher Institut für Technologie (KIT), Karlsruhe, Germany
2 Reiner Lemoine Institut gGmbH, Berlin, Germany
3 Eidgenössische Technische Hochschule Zürich (ETH), Zurich, Switzerland

Energy management systems and load growth

Makalu

PAPER PRESENTATION

Chair : Dr. Ali Arabnya, (Director at Quanta Technology / Research Prof. at Univ. of Denver, USA)

A9068AP

The Impacts of the Uncertainty in Demand Growth and Load Models on Distribution Network Operation

Airam Perez Guillen (1) (presenting author), Ester Thomas Marcel (1), Saad A. Alyoubi (1), Jovica V. Milanovic (1), Shengji Tee (2)

1 The University of Manchester, Manchester, United Kingdom
2 Scottish Power Energy Networks, Glasgow, United Kingdom

A9069SA

The Influence of Load Growth Scenarios on Distribution Network Operation

Saad Alyoubi (1) (presenting author), Airam Perez Guillen (1), Ester Thomas Marcel (1), Jovica Milanovic (1), Tee Shengji (2)

1 The University of Manchester, Manchester, United Kingdom
2 Scottish Power Energy Networks, Glasgow, United Kingdom

A9010DS

A Distributed Framework for Agent-based Optimal Energy Management of Distribution Systems

Debopama Sen Sarma (1) (presenting author), Sebastian Peter (1), Christian Rehtanz (1)

1 TU Dortmund, Dortmund, Germany

A8851YZ

Optimal Energy Management for Multi-Microgrid System Based on Stackelberg Game

Yingrui Zhuang (1) (presenting author), Lin Cheng (1), Ning Qi (1), Hongtao Li (2), Zijin Li (2), Chen Wang (2)

1 Tsinghua University, Beijing, China
2 State Grid Beijing Electric Power Co., Ltd., Beijing, China

A9076YS

A Robust Energy Management Controller for Microgrid Operations Considering Generator's Feasibility and Energy Trading

Yutaka Sasaki (1) (presenting author), Yuki Uesugi (1), Naoto Yorino (1), Yoshifumi Zoka (1), Kihembo Samuel Mumbere (1), Chiraz Krifa (1), Shinya Sekizaki (1), Bedawy Ahmed (1)

1 Hiroshima University, Higashi-Hiroshima, Japan

A8950SR

Towards Safe Model-Free Building Energy Management using Masked Reinforcement Learning

Sharath Ram Kumar (1,2) (presenting author), Remy Rigo-Mariani (1), Benoit Delinchant (1), Arvind Easwaran (2)

1 Univ. Grenoble Alpes, CNRS, Grenoble INP, G2Elab, Grenoble, France
2 Nanyang Technological University, Singapore, Singapore

Residential demand-side flexibility provision under a multi-level segmented tariff

Na Li (1), Kenneth Bruninx (1), Simon Tindemans (1), Zofia Lukszo (1) (presenting author)
1 Delft university of technology, DELFT, Netherlands

Na Li (1), Kenneth Bruninx (1), Simon Tindemans (1), Zofia Lukszo (1) (presenting author)
1 Delft university of technology, DELFT, Netherlands

Cybersecurity   *MontBlanc 1-2*

PAPER PRESENTATION

Chair : Prof. Jovica Milanovic (Univ. of Manchester / F.IEEE, UK)

A9132MG
Impact of Cyberattacks Targeting Distributed Photovoltaic Inverters
Marta Gomis Domènech (1) (presenting author), Yassine Naimi (1), Xavier Le Pivert (1)
1 CEA, Le Bourget du Lac, France

A9070MA
Motif-Based Reliability Analysis for Cyber-Physical Power Systems
Hamed Binqadhi (1), Mohammad AlMuhaini (1) (presenting author), H. Vincent Poor (2), Hao Huang (2)
1 King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia
2 Princeton University , Princeton, United States

A8795KK
Coordinated cyber attacks on smart grids considering software supply chains
Kirill Kuroptev (1) (presenting author), Florian Steinke (1)
1 Technical University of Darmstadt, Darmstadt, Germany

A9059AJ
Set-point Adjustment Attacks on Under Frequency Load Shedding Relays: A Risk Assessment Study
Amirreza Jafari Anarjan (1) (presenting author), Hakan Ergun (1), Dirk Van Hertem (1)
1 KU Leuven, Leuven, Belgium

A9030HB
Cybersecurity Resilient for Quartile-based Transformer Differential Protection Scheme
Het Bhalja (1) (presenting author), Bhaveshkumar Bhalja (1), Pramod Agarwal (1)
1 Indian Institute of Technology Roorkee, Roorkee, India

A9075SP
Cyber-Secured Distributed Control System for Reliable AC Microgrids
Smitha Joyce Pinto (1) (presenting author), Gayadhar Panda (2)
1 Maharaja Institute of Technology Mysore, Mysore, India
2 National Institute of Technology Meghalaya, Shillong, India

Simulation VS real world   *MontBlanc 3-4*

PAPER PRESENTATION

Chair : Prof Hongye Guo (Tsinghua Univ., Dpt of Electrical Engineering, China)

A8858PP

A Time Efficient Factorial Hidden Markov Model Based Approach for Non-Intrusive Load Monitoring

Partik Partik Kumar (1) (presenting author), Abhijit R. Abhyankar (1)
1 Indian Institute of Technology Delhi, New Delhi, India

A9099RM

gritulator: Grid Converter Simulator in Python

Rayane Mourouvin (1) (presenting author), Jarno Kukkola (1), Lauri Tiitinen (1), Marko Hinkkanen (1)
1 Aalto University, Espoo, Finland

A8854PP

Mixed Integer Quadratic Programming and Change-Point Detection based Framework for Non-Intrusive Load Monitoring

Partik Kumar (1) (presenting author), Abhijit R.Abhyankar (1)
1 Indian Institute of Technology Delhi, New Delhi, India

A8867AP

Towards a Modular Digital Twin Microservice Architecture for Urban Multi-Energy Systems

Alexander Pastor (1) (presenting author), Sebastian Alexander Uerlich (1), Sebastian Schwarz (1), Antonello Monti (1,2)
1 RWTH Aachen University, Aachen, Germany
2 Fraunhofer FIT, Aachen, Germany

A7351AO

Applications of Digital Twins for Demand Side Recommendation Scheme with Consumer Comfort Constraints

Abiodun Onile (1) (presenting author), Juri Belikov (1), Eduard Petlenkov (1), Yoash Levron (1)
1 Tallinn University of Technology, Tallinn, Estonia

A8814NN

System Level Modeling of Electrolyzers for Digital Real-Time Applications

Nils Nemsow (1) (presenting author), Giovanni De Carne (1)
1 Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

Hygrogen for the power system   *Everest*

PAPER PRESENTATION

Chair : Dr. Zhenyu Huang (Assoc. Prof. at Tsinghua Univ., Dpt of Electrical Engineering, China)

A8995OP
Risk-conscious asset sizing and energy procurement planning for an electrolytic hydrogen producer.
Owen Palmer (1,2) (presenting author), Hugo Radet (2), Simon Camal (1), Robin Girard (1)
1 Mines Paris - PSL University, Sophia Antipolis, France
2 Verso Energy, Paris, France

A8915AJ
Hydrogen production via electrolysis in 2030: comparing four connection schemes through energy system optimization.
Anaëlle Jodry (1) (presenting author), Robin Girard (1), Pedro Henrique Affonso Nobrega (1), Robin Molinier (2), Moulay-Driss Elalaouifaris (2)
1 Mines Paris - Centre for Processes, Renewable Energy and Energy Systems (PERSEE), Sophia Antipolis, France
2 Air Liquide Research & Development, Paris Innovation Campus, Les Loges-en-Josas, France

A8775MF
Impact of Landing Interruptions on the Optimal Design and Operation of Green Hydrogen Hubs
Markus Fleschutz (1,2,3) (presenting author), Daniel Bull (2), Marco Braun (2), Michael D. Murphy (1)
1 Munster Technological University, Cork, Ireland
2 Karlsruhe University of Applied Sciences, Karlsruhe, Germany
3 Entelios AG, Munich, Germany

A8714N
The Impact of Providing Balancing Services with Electrolyzers on Power and Hydrogen Balancing Responsible Groups
Nikolina Covic (1) (presenting author), Ivan Pavic (2), Hrvoje Pandzic (1)
1 University of Zagreb Faculty of Electrical Engineering and Computing, Zagreb, Croatia
2 University of Luxembourg Interdisciplinary Centre for Security, Reliability and Trust, Luxembourg, Luxembourg

A8926MS
Switchable fuel cell electrolysis system for grid-related purposes using real bus depot data
Maximilian Schifferdecker (1), Dennis Hamann (1) (presenting author), Detlef Schulz (1)
1 Helmut-Schmidt-Universität / Universität der Bundeswehr Hamburg, Hamburg, Germany

A9063TS

Power-to-gas: value-stacking by waste-heat utilization and curtailment prevention

Thomas Swarts (1) (presenting author), Johan Morren (1), Wouter van den Akker (1), Arjan van Voorden (2,3), Han Slootweg (1)

1 Eindhoven University of Technology, Eindhoven, Netherlands
2 Stedin, Rotterdam, Netherlands
3 Delft University of Technology, Delft, Netherlands

Batteries for the power system 2   *Makalu*

PAPER PRESENTATION

Chair : Prof. Geert Deconinck (KU Leuven/EnergyVille, Belgium)

A8822NG
Balanced Multiple Battery Energy Storage System for Congestion Management: RTE's algorithms for RINGO project
Nicolo Gionfra (1) (presenting author), Jean Maeght (1), Ghiles Abdellah (1), Sylvain Epaillard (1)
1 RTE, Paris, France

A9067ZL
Maximizing Power Dispatch of Wind-Storage System with Dynamic Thermal Rating Considering Battery Degradation Costs
Zhongtian Li (1) (presenting author), Patrik Hilber (1), Stefan Ivanell (2), Tor Laneryd (3)
1 KTH royal institute of technology, Stockholm, Sweden
2 Wind Energy Campus Gotland, Uppsala University, Visby, Sweden
3 Hitachi Energy Research, Västerås, Sweden

A9133JM
A Hybrid Energy Storage System for flexibility provision: Modelling and Control design.
Jemma J. Makrygiorgou (1,2), Despoina I. Makrygiorgou (1,2), Serafeim Panidis (1) (presenting author), Christos Dikaiakos (1), Jun Rong (1), Antonio T. Alexandridis (2)
1 Independent Power Transmission Operator, Athens, Greece
2 Department of Electrical and Computer Engineering, University of Patras, Patras, Greece

A8909AM
Valuation Models for Frequency Services Provision with an Energy Storage System
Ahmed Mohamed (1) (presenting author), Rémy RIGO-MARIANI (1), Vincent DEBUSSCHERE (1), Lionel PIN (2)
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2 Atos Worldgrid Solutions for Energy and Utilities, Grenoble, France

A8862NQ
Capacity Credit Evaluation of Generic Energy Storage under Decision-dependent Uncertainty
Ning Qi (1) (presenting author), Lin Cheng (1), Hongtao Li (2), Yingrui Zhuang (1), Liang Hao (2), Feng Liu (1)
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2 State Grid Beijing Electric Power Company, Beijing, China

A9150IM
Levelized Cost of Storage for Hybrid Energy Storage Systems with Fast Response Capabilities for Energy Arbitrage and Fast Frequency Response
Ioannis Moschos (1) (presenting author), Nikolaos Koltsaklis (1), Konstantinos Oureilidis (1), Constantinos Parisses (1), Georgios Christoforidis (1)
1 Department of Electrical and Computer Engineering, University of Western Macedonia, Kozani, Greece

Resilience 1 : climate and extreme weather events

MontBlanc 1-2

PAPER PRESENTATION

Chair : Prof. Costas Vournas (National Technical Univ. of Athens, Greece)

A8589ID

Grid Restoration After Extreme Weather Events

Svetlana Ekisheva (2) (presenting author), Donna Pratt (2), Maria Kachadurian (2), William Martin (2), Jack Norris (2), Ian Dobson (1)

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2 North American Electric Reliability Corporation, Atlanta, United States

A8874XW

Weather Event Preparedness Modelling for Distribution Systems

Xavier Weiss (1) (presenting author), Lars Nordström (1), Patrik Hilber (1), Arvid Rolander (1)

1 KTH, Stockholm, Sweden

A9098AP

Assessing the vulnerability of overhead line wires to flashovers due to reduced insulation distances for power system resilience studies

Emanuele Ciapessoni (1), Diego Cirio (1), Andrea Pitto (1) (presenting author), Silverio Casulli (2), Federico Falorni (2), Francesca Scavo (2)

1 Ricerca sul Sistema Energetico RSE S.p.A., Milan, Italy

2 Terna Corporate S.p.A., Rome, Italy

A8584LP

reXplan: A Novel Tool for the Analysis of Climate Resilience in Power Systems

Luca Pizzimbone (1) (presenting author), Firas Belhaj Jrad (1)

1 Tractebel Engineering GmbH, Bad Vilbel, Germany

A9090HN

Integrating sustainability and resilience aspects into power system technology assessments

Henrik Netz (1) (presenting author), Ingo Schönwandt (2), Henning Wigger (1), Urte Brand-Daniels (1), Daniel Lichte (2), Thomas Vogt (1)

1 German Aerospace Center- Institute of Networked Energy Systems , Oldenburg, Germany

2 German Aerospace Center- Institute for the Protection of Terrestrial Infrastructure , St. Augustin, Germany

A8785EK

A Monte Carlo sampling procedure for rare events applied to power system reliability analysis

Erlend Sandø Kiel (1) (presenting author), Gerd Hovin Kjølle (1)

1 SINTEF Energy, Trondheim, Norway

Ancillary services   *MontBlanc 3-4*

PAPER PRESENTATION

Chair : Dr. Matthew Deakin (Royal Academy of Engineering Research Fellow at Newcastle Univ., UK)

A9139LH

Ancillary Services Prioritization in Inverters with Virtual Synchronous Generator Functionalities

Eleni Tekki (1), Lenos Hadjidemetriou (1) (presenting author), Manuel Barragan-Villarejo (2), Francisco Jesus Matas-Diaz (2), Jose Maria Maza-Ortega (2), Antonio Gomez-Explosito (2), Marios Polycarpou (1)
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A8905LO

Deployment of an Online Feedback Optimization Controller for Reactive Power Flow Optimization in a Distribution Grid

Lukas Ortmann (1) (presenting author), Christian Rubin (1), Alessandro Scozzafava (2), Janick Lehmann (2), Saverio Bolognani (1), Florian Dörfler (1)
1 ETH Zurich, Zurich, Switzerland
2 AEW Energie AG, Aarau, Switzerland

A8804DK

A low voltage ride through (LVRT) strategy using an active superconductor fault current limiter (SFCL) for a virtual synchronous generator (VSG) connected to a weak grid

Daniel Kisinga (1) (presenting author), Paul Trodden (1)
1 The University of Sheffield, Sheffield, United Kingdom

A9077AN

Design of Adaptive Control Scheme for Provision of Frequency Regulation Service from Electric Vehicle Fleet

Angshu Nath (1) (presenting author), Zakir Rather (1)
1 Indian Institute of Technology Bombay, Mumbai, India

A9123MU

Taking advantage of PV systems for multi-period optimal reactive power dispatch: A Convex Optimization Approach

Mario Useche (1,2), Lacerda Vinicius (1,2) (presenting author), Oriol Gomis (1,2), Cheah Marc (1,2)
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2 CITCEA, Barcelona, Spain, Spain

A8845YZ

A Review on Mathematical Modelling of Reactive Power Ancillary Service Market

Yunyang Zou (1) (presenting author), Yan Xu (1), Qiaoqiao Li (1)
1 Nanyang Technological University, Singapore, Singapore

Problem uncertainties

Everest

PAPER PRESENTATION

Chair : Dr. Roman Le Goff-Latimier (Assoc. Prof. at SATIE, ENS Rennes, France)

A8859MA
Assessment of Forecasting-Aided State Estimation Under Measurement Errors and Topology Changes
Malek Alduhaymi (1) (presenting author), Ravindra Singh (2), Bikash Pal (1)
1 Imperial College London, London, United Kingdom
2 Argonne National Laboratory, Lemont, IL, United States

A9012ZV
Hourly uncertainty in optimal expansion planning considering energy storage and seasonal impacts
Fabio Castro (1), Bruno Canizes (1) (presenting author), João Soares (1), Zita Vale (1)
1 Polytechnic of Porto, Porto, Portugal

A8754EM
Efficient Probabilistic Assessment of the Impact of Renewable Generation on Annual Steady State Performance of Distribution Network
Ester Marcel (1) (presenting author), Jovica Milanovic (1)
1 The University of Manchester, Manchester, United Kingdom

A8587HS
A Decision-Dependent Chance-Constrained Planning Model for Distribution Networks Under Extreme Weather Events
Anping Zhou (2), Hongbo Sun (1) (presenting author), Shoichi Kitamura (3), Daniel Nikovski (1)
1 Mitsubishi Electric Research Laboratories, Cambridge, United States
2 Southern Methodist University, Dallas, United States
3 Mitsubishi Electric Corporation, Amagasaki, Japan

A9083HC
Applying Bayesian Approach in Real-Time Monitoring of Converter-Driven Oscillation
Hock-Lim Cheng (1) (presenting author), Siu-Kui Au (3), Janne Seppänen (2), Matti Lehtonen (2)
1 Fingrid, Helsinki, Finland
2 Aalto University, Espoo, Finland
3 Nanyang Technological University , Singapore, Singapore

A9093FS
Statistics-informed bounds for active distribution network equivalents subject to large disturbances
Frédéric Sabot (1) (presenting author), Pierre Henneaux (1), Ifigeneia Lamprianidou (2), Panagiotis Papadopoulos (2)
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2 University of Strathclyde, Glasgow, United Kingdom

Flexibilities 1   *Makalu*

PAPER PRESENTATION

Chair : Prof. Jovica Milanovic (Univ. of Manchester / F.IEEE, UK)

A8643FL
Contribution of Conventional Demand Response Resources to Peak Shaving of Power Substations
François Laurencelle (1) (presenting author), Michaël Fournier (1), Charles Desbiens (2), Daniel Chabot (2)
1 Centre de recherche d'Hydro-Québec, Shawinigan, Canada
2 Hydro-Québec, Montréal, Canada

A8680PS
Demand Response From Steelmaking Process Coordinated With Energy Storage Systems
Pengfei Su (1) (presenting author), Yue Zhou (1)
1 Cardiff University, Cardiff, United Kingdom

A8673SN
Unlocking Building Flexibility Considering Minimum Comfort Level and Energy Bill
Saman Nikkhah (1) (presenting author), Adib Allahham (2), Sara Walker (1), Damian Giaouris (1)
1 Newcastle University, Newcastle upon Tyne, United Kingdom
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A9013ZV
Demand Response-based Energy Management Model for Energy Communities considering Data Privacy of the Members
Ruben Barreto (1), Luis Gomes (1), Zita Vale (1) (presenting author)
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A9055GF
Multi-Level Traffic Light Signals Integrating Energy Market and Grid Needs
Gerald Franzl (1) (presenting author), Stefan Wilker (2), Thilo Sauter (1,2)
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2 TU Wien, 1040 Vienna, Austria

A8709RL
LSTN: A Linear Model of Industrial Production Process for Demand Response
Ruike Lyu (1) (presenting author), Hongye Guo (1), Yuanjie Zheng (2), Yunlong Bai (3), Qixin Chen (1)
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2 State Grid Corporation of China, Beijing, China
3 State Grid Anhui Electric Power Co., Ltd., Hefei, China

Electric vehicles 2   *Auditorium*

PAPER PRESENTATION

Chair : Prof. Bruno François (L2EP-Centrale Lille, France)

A8808GC

A Computational Implementation for Creating Electric Vehicles Profiles

Guzman Lascano Cindy Paola (1) (presenting author), Gomes Eduardo (1,2), Pereira Lucas (1,2), Morais Hugo (1)
1 INESC-ID-Instituto de Engenharia de Sistemas e Computadores-Investigação e Desenvolvimento, Department of Electrical
and Computer Engineering, Instituto Superior Técnico-IST, Universidade de Lisboa, Lisbon, Portugal
2 Department of Electrical and Comput

A8821PD

Reducing Marginal Emissions of an Electric Vehicle Fleet through Smart Charging and Vehicle-to-grid

Pierre Dumont (1,2) (presenting author), Marc Petit (1), Damien-Pierre Sainflou (2)
1 GeePs, Gif-sur-Yvette, France
2 Stellantis, Carrières-sous-Poissy, France

A9166RP

Deployment and sizing of EVCS clusters with RES and BESS from the network operator's perspective

Ricardo Pastor (1) (presenting author), Alexandre Gouveia (1), Nuno Fulgêncio (1), Gonçalo Glória (1), Yuyang Li (2),
Xiangjun Li (2)
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2 China Electric Power Research Institute, Beijing, China

A9060PD

Smart Opportunity Charging Strategy for Electric Buses

Payal Dahiwale (1) (presenting author), Zakir Rather (1), Amita Kumari (1)
1 Indian Institute of Technology Bombay, Mumbai, India

A9017NK

Charging management of EVs in smart grid for Cost Minimization

Mithra Vinda Reddy (1), Sarvesh Babu R G (1), Shwetha S (1), Sivasankari GS (1), NARAYANAN K (1) (presenting author),
Anurag Sharma (2), Alexander Aguila Tellez (3)
1 Dept. of EEE, SASTRA DEEMED TO BE UNIVERSITY, THANJAVUR, India
2 Department of Electrical Power Engineering, NEWCASTLE UNIVERSITY, SINGAPORE, SINGAPORE, Singapore
3 Universidad Polit´ecnica Salesiana, QUITO, Ecuador

A8847HA

Optimal Day-Ahead Transport and Charge Scheduling of Autonomous Electric Vehicle Fleet using Local Renewable Energy Generation

Haider Ali (1,2) (presenting author), Bruno Francois (1), Luce Brotcorne (2)

1 L2EP - Ecole Centrale de Lille, Lille, France

2 INOCS - INRIA, Lille, France

Resilience 2

MontBlanc 1-2

PAPER PRESENTATION

Chair : Dr. Martha Symko-Davies (Laboratory Program Manager for Energy Systems Integration, NREL, USA)

A9170KS
Exploring data collection and fusion of medium voltage cable failures - A Danish case study
Konrad Sundsgaard (1,2) (presenting author), Jens Zoëga Hansen (1), Guangya Yang (2), Massimo Cafaro (3), Peter Kjær Hansen (1)
1 Green Power Denmark , Kopenhagen , Denmark
2 Technical University of Denmark (DTU), Kopenhagen , Denmark
3 University of Salento, Lecce, Italy

A8710TP
Residual Signature Analysis for Wind Turbine Failure Prognosis
Topon Paul (1) (presenting author), Vidhisha Reddy (2), Sai Prem Kumar Ayyagari (2), Kaneharu Nishino (1)
1 Toshiba Corporation, Kanagawa , Japan
2 Toshiba Software (India) Pvt. Ltd., Bangalore, India

A8836OS
Benchmark Evaluation of Anomaly-Based Intrusion Detection Systems in the Context of Smart Grids
Ömer Sen (1,2) (presenting author), Simon Glomb (2), Martin Henze (3,4), Andreas Ulbig (1,2)
1 Fraunhofer FIT, Sankt Augustin, Germany
2 RWTH Aachen University IAEW, Aachen, Germany
3 RWTH Aachen University SPICE, Aachen, Germany
4 Fraunhofer FKIE, Wachtberg, Germany

A9131AG
A Network Reduction Method for the Distribution Network Reconfiguration Problem
Aghyles Graine (1,2), Nour Karnib (3) (presenting author), Emmanuel Grolleau (3), Antoine Bertout (1), Didier Larraillet (2), Jean-Paul Gaubert (1)
1 Université de Poitiers, Poitiers, France
2 SRD, Poitiers, France
3 École nationale supérieure de mécanique et d'aérotechnique (ENSMA), Poitiers, France

A8919TB
Encrypted Traffic Classification for Early-Stage Anomaly Detection in Power Grid Communication Network
Tohid Behdadnia (1) (presenting author), Can Ozkan (2), Dave Singelee (2), Geert Deconinck (1)
1 KU Leuven-EnergyVille, Leuven, Belgium
2 KU Leuven-COSIC, Leuven, Belgium

Powering Europe's Energy Transition: Financial Viability of a Full-Scale Meshed HVDC Grid and Hybrid Offshore Assets in the North Sea

Chandra kant Jat (1,2), Stephen David William Hardy (1,2) (presenting author), Jay Dave (3), Hakan Ergun (1,2), Dirk Van Hertem (1,2)
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2 EnergyVille , Genk, Belgium
3 Siemens AG, Erlangen, Germany

Powering Europe's Energy Transition: Financial Viability of a Full-Scale Meshed HVDC Grid and Hybrid Offshore Assets in the North Sea

Protections and faults

PAPER PRESENTATION

Chair : Dr. Jochen L. Cremer (Delft Univ. of Technology, Netherlands)

A8872JM

Isolated Hybrid System Protection Performance: A Study Case in Island S

Joko Muslim (1,2), Amiruddin Amiruddin (1) (presenting author), Teguh Kunianto (1), Dhandis Rito Jintaka (1), Hikmah Prasetya (1), Didik Dauzi Dakhlan (1)
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2 IT PLN, Jakarta, Indonesia

A8794FB

Development of a rotary reluctance actuator for active condition monitoring of mechanically driven medium voltage circuit breakers

Felix Boy (1) (presenting author), Arda Tüysüz (1), Gianluca Cortinovis (2), Alessandro Stucchi (2)
1 ABB, Mannheim, Germany
2 ABB, Dalmine, Italy

A9042TS

5G Communication Infrastructure for Smart Grids: A Protection Use Case

Talal Saleh (1) (presenting author), Petri Välisuo (1), Kimmo Kauhaniemi (1), Mohammed Elmusrati (1)
1 University of Vaasa, Vaasa, Finland, Finland

A9024LQ

A Sensor Fault Detection and Imputation Framework for Electrical Distribution Grids

Lars Quakernack (1) (presenting author), Valerie Vaquet (2), Barbara Hammer (2), Jens Haubrock (1)
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A8743TH

Development of a Directional Element for Solar Inverter-Rich Distribution Networks

Tran The Hoang (1) (presenting author), Nirmal-Kumar C. Nair (1)
1 The University of Auckland, Auckland, New Zealand

A9184AB

A reliability-based optimal number of PMUs for profitable fault location on MV feeders

Alexandre Bach (1) (presenting author), Trung Dung Le (1), Marie-Cécile Alvarez-Hérault (2), Marc Petit (1)
1 Geeps Centralesupelec, Gif sur Yvette, France
2 G2ELAB University Grenoble Alpes, Grenoble, France

Load and solar power forecasting

Everest

PAPER PRESENTATION

Chair : Prof. George Kariniotakis (Mines Paris, PSL University, France)

A8830HN

Day ahead PV output power forecasting utilizing boosting recursive LightGBM-LSTM framework

Hossein Nourollahi Hokmabad (1) (presenting author), Oleksandr Husev (1), Dmitri Vinnikov (1), Juri Belikov (1), Eduard Petlenkov (1)

1 Tallinn University of Technology, Tallinn, Estonia

A9101SM

Maximum Available Power Estimation in Solar Photovoltaic Power Plants Using Reference Inverters: A Critical Assessment

Soudipan Maity (1) (presenting author), Zakir Hussain Rather (1), Suryanarayana Doolla (1)

1 Indian Institute of Technology Bombay, Mumbai, India

A8764PD

Probabilistic Forecasting of Current Harmonic Distortions in Distribution Systems

Antonio Bracale (1), Pierluigi Caramia (1), Pasquale De Falco (1) (presenting author), Max Domagk (2), Jan Meyer (2)

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A9156LC

Prosumers Energy Consumption Forecasting: Leveraging LSTM and XGBOOST with Spatial and Weather Features

Lan Chu (1), Sepideh Kia (2), Robert Sokolewicz (3) (presenting author), Johan Morren (2)

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3 Delft University of Technology, Delft, Netherlands

A9085RZ

Day-Ahead Solar Irradiance Forecasting using a Hybrid Weather-Based Attention BiLSTM Approach for Power System Operation Scheduling

Rehman Zafar (1) (presenting author), Il-Yop Chung (1)

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A8841YB

Electricity Demand Forecasting through Natural Language Processing with Long Short-Term Memory Networks

Yun Bai (1) (presenting author), Simon Camal (1), Andrea Michiorri (1)

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Microgrid 1 : protection and stability   *Makalu*

PAPER PRESENTATION

Chair : Dr. Jérôme Buire (Assoc. Prof. at Grenoble INP | Univ. Grenoble Alpes, France)

A8991JM

Large-Signal Stability of Inverter-Based LV Microgrids: Share of Grid-Forming Units

Jane Marchand (1) (presenting author), Jérôme Buire (1), Vincent Debusschere (1), Nabil El Jarrai (2), Jean Pompee (2), Nouredine Hadjsaid (1)

1 Univ. Grenoble Alpes, CNRS, Grenoble INP**, G2Elab, F-38000 Grenoble, France ** Institute of Engineering Univ. Grenoble Alpes, Grenoble, France
2 Enedis, Paris, France

A8788LC

Comparison of Losses and Costs between AC and MVDC Connections for New DC Resources

Laurent Cornaggia (1,2) (presenting author), Robin Girard (2), Olivier Despouys (1), Hélène Clémot (1), Panagiotis Andrianesis (3)

1 RTE, Paris, France
2 Mines Paris - PSL University, Paris, France
3 Technical University of Denmark, Lyngby, Denmark

A9002LZ

Feedback-based AC OPF Integrating a Model Predictive Control Strategy for Optimal Operation of Microgrids

Linan Zhang (1) (presenting author), Anastasios Oulis Rousis (1), Goran Strbac (1)
1 Imperial College London, London, United Kingdom

A8780MM

Improved redundancy of an islanded microgrid via seamless transition between operation modes

Matheus Montanini Breve (1,2) (presenting author), Gabriele Michalke (1), Bernd Bohnet (1), Julia Kowal (2), Kai Strunz (2)
1 Robert Bosch GmbH, Renningen, Germany
2 Technical University of Berlin, Berlin, Germany

A8870TM

Dual-Layer Based Microgrid Protection Using Voltage Synchrophasors

Thiago S. Menezes (1) (presenting author), Ricardo A.S. Fernandes (2), Denis V. Coury (1)
1 University of São Paulo, São Carlos, Brazil
2 Federal University of São Carlos, São Carlos, Brazil

Artificial intelligence 3

MontBlanc 1-2

PAPER PRESENTATION

Chair : Dr. Pedro Vergara Barrios (Delft Univ. of Technology, Netherlands)

A8815NJ

AI Driven Near Real-time Locational Marginal Pricing Method: A Feasibility and Robustness Study

Naga Venkata Sai Jitin Jami (1,2) (presenting author), Juraj Kardos (1), Olaf Schenk (1), Harald Koestler (2)
1 Università della Svizzera italiana, Lugano, Switzerland
2 Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany

A8962NH

Artificial Intelligence for Determining the Cause of low Voltage due to insufficient Reactive Power Provision in the Transmission System

Nadja Isabelle Hiersemann (1) (presenting author), Florian Sass (2), Dirk Westermann (1)
1 Technische Universität Ilmenau, Ilmenau, Germany
2 50Hertz Transmission GmbH, Neuenhagen, Germany

A9178OK

Optimization and Scalability of Blockchain Enabled Demand Response Smart Contracts using Sharding and Neural Networks

Ondrea Kanwhen (1) (presenting author), Jatin Jain (1), Ahmed Mohamed (1)
1 City College of New York, New York, United States

A9025PF

Explainable Artificial Intelligence for Definition of Inputs in Neural Networks and K-nearest Neigbors Forecasting of Electricity Consumption

Daniel Ramos (1), Pedro Faria (1) (presenting author), Zita Vale (1)
1 Polytechnic of Porto, Porto, Portugal

A9018SH

Data Science Challenges; A Whole Systems Lens for Energy Network Solutions

Stephen Haben (1) (presenting author), Sam Young (1), Liam McSweeny (2)
1 Energy Systems Catapult, Birmingham, United Kingdom
2 National Grid Electricity Distribution, Bristol, United Kingdom

A8672AB

Using domain-augmented federated learning to model thermostatically controlled loads

Attila Balint (1) (presenting author), Haroon Raja (2), Johan Driesen (1), Hussain Kazmi (1)
1 KU Leuven, Leuven, Belgium
2 Tufts University, Medford, United States

Power electronics   *Kilimandjaro 3-4*

PAPER PRESENTATION

Chair : Dr. David Frey (Assoc. Prof. at Grenoble INP | Univ. Grenoble Alpes, France)

A8646AS
Control and Sizing of Back-to-Back Converter in Interconnected Microgrids
Ahmed Sunjaq (1) (presenting author), Peiyuan Chen (1), Massimo Bongiorno (1), Ritwik Majumder (1), Jan R Svensson (2)
1 Chalmers University of Technology, Göteborg, Sweden
2 Hitachi Energy, Västerås, Sweden

A8957PO
Reducing electrical losses in buildings: a study of load-side dc/dc converter topologies for low-power appliances
Patrik Ollas (1,2), Torbjörn Thiringer (2), Niclas Samuelsson (3), Ahmed Sunjaq (2) (presenting author)
1 RISE Research Institutes of Sweden, Borås, Sweden
2 Chalmers University of Technology, Gothenburg, Sweden
3 Plejd AB, Gothenburg, Sweden

A8685JW
Experimental Analysis of Immersion & Invariance Adaptive Control for an Interleaved DC/DC Boost Converter with Unknown Load Type
Jan Wachter (1) (presenting author), Lutz Gröll (1), Veit Hagenmeyer (1)
1 Karlsruhe Institut of Technology, Karlsruhe, Germany

A8634TS
Evaluation of Countermeasures against Voltage Flicker in Photovoltaic Inverters
Tomoaki Shoji (1) (presenting author), Naoyuki Sasaki (1), Masahiko Hasegawa (1), Toshifumi Karasawa (1), Satoru Akagi (2), Ryota Yamamoto (2)
1 Tokyo Electric Power Company Holdings, Inc., Kanagawa, Japan
2 Tokyo Electric Power Company Power Grid, Inc., Tokyo, Japan

A9053AH
Control Strategy for a Triple Active Bridge Converter: a Generalized Average Model Approach
Andrés Camilo Henao-Muñoz (1) (presenting author), Antonio Pepiciello (1), José Luis Domínguez-García (1)
1 Catalonia Energy Research Institute , Barcelona, Spain

A9165JS
Polynomial Fitting of Operating Point Dependency in Small-Signal State-Space Models for Power Electronic Converters
Lisa Reis (2,3) (presenting author), Andrew Maxmillian Smith (1), Salvatore D'Arco (1), Jon Are Suul (1,2)
1 SINTEF Energy Research, Trondheim, Norway
2 Department of engineering cybernetics, Norwegian University of Science and Technology, Trondheim, Norway
3 Technical University of Kaiserslautern, Kaiserslautern, Germany

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Hardware in the loop   *MontBlanc 3-4*

PAPER PRESENTATION

Chair : Dr. Thai-Phuong Do (CEA, France)

A9164Sk
P-HIL Validation for Double Loop Proportional Control in abc Stationary Frame for Grid Forming Inverter
Samuel kamajaya (1,2) (presenting author), Jerome BUIRE (2), Raphael CAIRE (2), Seddik BACHA (2), Wild Jean (1)
1 Schneider electric, grenoble, France
2 Univ. Grenoble Alpes, CNRS, Grenoble INP*, G2Elab, Grenoble, France

A9161Sk
Hardware in the loop (HIL) modeling and validation for microgrid solution testing and commissioning
Samuel kamajaya (1), Audrey Moulichon (1) (presenting author), Florent Aubert (1), Jean Wild (1)
1 Schneider electric, grenoble, France

A8738HC
Integrated HiL Simulation of Multiple Real-Time Simulator Platforms to Study the Interactions in a Multi-Converters Network
Hui Cai (1) (presenting author), Uwe Raedel (1), Steffen Schlegel (1), Dirk Westermann (1)
1 Ilmenau University of Technology, Ilmenau, Germany

A9108NB
Distributed Co-Simulation of Networked Hardware-in-the-Loop Power Systems
Nauman Beg (1), Moiz Ahmed (1) (presenting author), Karen Derendorf (1), Frank Schuldt (1), Stefan Geißendörfer (1)
1 German Aerospace Center (DLR), Oldenburg, Germany

C27375SK
Power-Hardware In the Loop for the growing microgrids industry
Samuel Kamajaya (1), Jean Wild (1) (presenting author), François Cazals (1), Moulichon Audrey (1)
1 Schneider Electric Industries SAS, Grenoble, France

A8784BE
A C-HIL based data-driven DC-DC power electronics converter model for system-level studies
Antonin Colot (1), Bastien Ewbank (1) (presenting author), Mevludin Glavic (1), Bertrand Cornélusse (1)
1 University of Liège, Liège, Belgium

State estimator

Everest

PAPER PRESENTATION

Chair : Dr. Simon Camal (Project Manager at Mines Paris, PSL University, France)

A8882WP
A Supervised Learning-Based Min/Max Voltage Estimation Model for All Nodes in Low-Voltage Networks

Woan-Ho Park (1) (presenting author), Jin Sol Hwang (1), Joonbyeok Hwang (1), Yohan Park (1), Won Namkoong (2), Yun-Su Kim (1)
1 Gwangju Institute of Science and Technology (GIST), Gwangju, Korea (Republic of)
2 Korea Electric Power Corporation, Daejeon, Korea (Republic of)

A9111KR
Demonstrating State Estimation for Future Smart Grid

Kalle Ruuth (1), Antti Supponen (1), Sami Repo (1) (presenting author), Antti Mutanen (2)
1 Tampere University, Tampere, Finland
2 ABB Oy, Tampere, Finland

A8941Sd
Parameter Estimation in Electrical Distribution Systems with limited Measurements using Regression Methods

Steven de Jongh (1) (presenting author), Felicitas Mueller (1), Claudio A. Canizares (2), Thomas Leibfried (1), Kankar Bhattacharya (2)
1 Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany
2 University of Waterloo, Waterloo, Canada

A9151SF
Physics-Informed Neural Networks for Accelerating Power System State Estimation

Solon Falas (1) (presenting author), Markos Asprou (1), Charalambos Konstantinou (2), Maria K. Michael (1)
1 Dept. of Electrical and Computer Engineering, KIOS Research and Innovation Centre of Excellence, University of Cyprus, Nicosia, Cyprus
2 CEMSE Division, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia

A8924At
Dynamic state estimation considering topology and observability in multi-area systems

Anton ter Vehn (1) (presenting author), Lars Nordström (1)
1 Royal Institute of Technology, Stockholm, Sweden

A8829PY
Reinforcement Learning-based District Cooling System Control for Voltage Regulation in Distribution Networks

Peipei Yu (1) (presenting author), Hongcai Zhang (1), Zechun Hu (1), Yonghua Song (1)
1 University of Macau, Macau, Macao

Microgrid 2 : grid forming converter and DC microgrid

Makalu

PAPER PRESENTATION

Chair : Dr. Guangya Yang (Senior Researcher at DTU, Denmark)

A8853FB

Optimal Source Placement in a DC Microgrid Considering Line Losses and Cables Weight

Fouad Boutros (1,2,3) (presenting author), Moustapha Doumiati (1), Jean-Christophe Olivier (3), Imad Mougharbel (4), Hadi Kanaan (2)

1 Ecole Supérieure de l'Electronique de l'Ouest (ESEO), Angers, France
2 Saint-Joseph University of Beirut, Beirut, Lebanon
3 Université de Nantes, Nantes, France
4 ETS Montréal, Montréal, Canada

A9118JR

Decoupled Active and Reactive Power Controllers for Damping Low-Frequency Oscillations using Virtual Synchronous Machines

Njegos Jankovic (1), Javier Roldan-Perez (1) (presenting author), Milan Prodanovic (1), Salvatore D'Arco (2), Jon Are Suul (2), Luis Rouco (3)

1 IMDEA Energy Institute, Mostoles, Spain
2 SINTEF Energy, Trondheim, Norway
3 Institute for Research in Technology, ICAI, Comillas Pontifical University, Madrid, Spain

A9086PP

Novel PLL-less Direct Power Control of VSCs

Panos Papageorgiou (1), Antonio Alexandridis (1) (presenting author)
1 University of Patras, Rion-Patras, Greece

A8812BB

A DC-bus Signalling-Based Control of EVCS to Maximize Self-Consumption of PV Production in a Tertiary Building

Benoît Bouckaert (1) (presenting author), Khaled Almaksour (1), Christophe Saudemont (1), Antoine Picot (3), Camille Thiriez (2)

1 Arts et Métiers Institute of Technology, Centrale Lille, Univ. Lille, JUNIA, ULR 2697 - L2EP, Lille, France
2 CEGELEC NORD TERTIAIRE, Wasquehal, France
3 VINCI Construction - Délégations Bâtiment Nord-Est et ANS, Roubaix, France

A8250DM

Grid Forming Inverter Modeling for Microgrid Studies in Distribution Systems

Davis MONTENEGRO (1) (presenting author), Roger DUGAN (1), Mobolaji BELLO (1), Celso ROCHA (1)
1 EPRI, Knoxville, United States

Optimal AC/DC Distribution Systems Expansion Planning from DSO's Perspective Considering Topological Constraints

Heitor Farias de Barros (1) (presenting author), Marie-Cecile Alvarez-Herault (1), Bertrand Raison (1), Quoc Tuan Tran (1,2)
1 G2Elab, Grenoble, France
2 CEA-INES, Bourget-du-Lac, France

Electric vehicles 3

Auditorium

PAPER PRESENTATION

Chair : Prof. Marc Petit (CentraleSupelec, France)

A8801YF

Electric Vehicle Charging Management for Avoiding Transformer Congestion Using Policy-based Reinforcement Learning

Yuzhuo Fu (1) (presenting author), Dennis Versen (1), Maik Plenz (1), Marcus Stiemer (1), Detlef Schulz (1)
1 Helmut-Schmidt-Universität, Hamburg, Germany

A8809NF

Forecasting the Flexibility Potential of Electric Vehicles Limited by Individual Charging Targets

Nelly-Lee Fischer (1) (presenting author), Krzysztof Rudion (1)
1 University of Stuttgart, Stuttgart, Germany

A9079GM

Warm Start Fitted Q Reinforcement Learning for Electric Vehicle Depot Charging

Stefano Massucco (1), Gabriele Mosaico (1), Matteo Saviozzi (1) (presenting author), Pablo Almaleck (2), Pietro Serra (2)
1 University of Genoa, Genova (GE), Italy
2 Hitachi Energy, Grid Automation Business Unit, Genova, Italy

A9120SP

Investigation on three-inverter fed two OEWIM drives

Srinivasan Pradabane (1) (presenting author), Chandrasekhar Yammani (1), Salvatore D'Arco (2), Kjell Ljøkelsøy (2)
1 National Institute of Technology Warangal, Warangal, India
2 SINTEF Energy Research, NTNU Campus, Trondheim, Norway

A8824TP

Forecasting Sensitivity Analysis of Reinforcement Learning Based Smart Charging

Thijs Peirelinck (1,2) (presenting author), Klaas Thoelen (1,2), Geert Deconinck (1,2)
1 KU Leuven, Leuven, Belgium
2 EnergyVille, Genk, Belgium

A8689AK

Clark-Park Transformation based Autoencoder for 3-Phase Electrical Signals

André Kummerow (1) (presenting author), Mansour Alramlawi (1), Mohammad Dirbas (1), Steffen Nicolai (1), Peter Bretschneider (1)
1 FRAUNHOFER IOSB-AST, ILMENAU, Germany

Market 1 : energy communities market   *Kilimandjaro 1-2*

Chair : Dr. Rémy Rigo Mariani (Researcher at CNRS, G2ELab, France)

A8883CS
Federated Learning in Competitive EV Charging Market
Chenxi Sun (1) (presenting author), Chao Huang (2), Biying Shou (3), Jianwei Huang (4)
1 Shenzhen Institute of Artificial Intelligence and Robotics for Society, Shenzhen, China
2 The University of California, Davis, Davis, United States
3 City University of Hong Kong, Hong Kong, China
4 The Chinese University of Hong Kong, Shenzhen, China

A8632RS
Implications of Electricity Tariff Design on the Operation of Renewable Energy Communities
Robin Sudhoff (1,2) (presenting author), Yasmine Bouraoui (2), Sebastian Schreck (1), Sebastian Thiem (1), Stefan Niessen (1,2)
1 Siemens AG, Erlangen, Germany
2 Technical University of Darmstadt, Darmstadt, Germany

A8802SD
Impact of Non-Routine Device Utilization on Local Electricity Market Trading Deviations
Sjoerd Doumen (1) (presenting author), Phuong Nguyen (1), Koen Kok (1)
1 Eindhoven University of Technology, Eindhoven, Netherlands

A8903SM
DER Pricing Power in the Presence of Multi-Location Consumers with Load Migration Capabilities
Sara Mollaeivaneghi (1) (presenting author), Julia Barbosa (1), Florian Steinke (1)
1 Technical University of Darmstadt, Darmstadt, Germany

A8817CJ
Determination of electricity marginal costs on the basis of power system production plans
Corentin JEANNE (1) (presenting author), Jean-Marc JANIN (1), Paul PLESSIEZ (1)
1 RTE, Paris, France

Energy Communities 1

MontBlanc 1-2

PAPER PRESENTATION

Chair : Dr. Jonathan Coignard (Researcher at CNRS, G2ELab, France)

A8871HA
Analysis of Predictive Models for Revealing Socio-Demographic Information in Smart Grid Data
Hussein Aly (1), Abdulaziz Al-Ali (1), Abdulla Al-Ali (1) (presenting author), Qutaibah Malluhi (1)
1 Qatar University, Doha, Qatar

A8826SP
Robust Operation of Energy Communities in the Italian Incentive System
Amal Nammouchi (2) (presenting author), Marta Stentati (1), Simone Paoletti (1), Andreas Kassler (3), Andreas Theocharis (4)
1 Department of Information Engineering and Mathematics, University of Siena, Siena, Italy
2 Computer Science Department, Karlstad University, Karlstad, Sweden
3 Faculty of Computer Science, Deggendorf Institute of Technology, Deggendorf, Germany
4 Engine

A8976MN
A Tutorial Serious Game for Demonstrating Demand Response in an Energy Community
Mikko Nykyri (1) (presenting author), Tommi J. Kärkkäinen (1), Salla Annala (1), Johanna Naukkarinen (1), Pertti Silventoinen (1)
1 LUT University, Lappeenranta, Finland

A9105KB
Optimal control of domestic hot water tanks in a housing cooperative - benefits for the grid
Kjersti Berg (1) (presenting author), Vemund Hjertvik Lenes (1), Karen Byskov Lindberg (1)
1 Norwegian University of Science and Technology, Trondheim, Norway

A8912NG
Community-based P2P energy market for prosumers with different tariffs in Spain
Nerea Goitia-Zabaleta (1,2) (presenting author), Ane Feijoo-Arostegui (1), Aitor Milo (1), Haizea Gaztañaga (1), Elvira Fernandez (2)
1 IKERLAN Technology Research Centre, Basque Research and Technology Alliance (BRTA), Arrasate-Mondragón, Spain
2 UPV/EHU Basque Country University, Bilbao, Spain

A9064SD
Exploration of the Trade-off between Short Term (Battery) and Long Term (Hydrogen) Storage for a Wind Powered Energy Community
Silvia Domene (1) (presenting author), Sebastian Martin (1)
1 Department of Electrical Engineering, Universidad de Malaga, Malaga, Spain

Stabilities 1 : frequency stability

Kilimandjaro 3-4

PAPER PRESENTATION

Chair : Prof. Costas Vournas (National Technical Univ. of Athens, Greece)

A8877HN
Implementation of Particle Swarm Optimization (PSO) to optimize parameters of an island grid in the aim of improving the frequency stability

Hung Cuong NGUYEN (1) (presenting author), Quoc Tuan TRAN (1), Yvon Besanger (2)
1 CEA-INES, GRENOBLE, France
2 G2Elab, GRENOBLE, France

A9169RA
Enhanced Frequency Control for Low Inertia Power Systems: Wide-Area Monitoring vs. Zonal Scheme
Rasoul Azizipanah-Abarghooee (1), Mostafa Malekpour (1), Mingyu Sun (2), Ben Marshal (3), Mazaher Karimi (4) (presenting author), Vladimir Terzija (5)
1 RINA Tech UK Ltd, Manchester, United Kingdom
2 National Grid, Wokingham, United Kingdom
3 National HVDC Centre, Glasgow, United Kingdom
4 University of Vaasa, Vaasa, Finland
5 Newcastle University, Newcastle, United Kingdom

A8639SO
Optimal placement of synchronous condensers based on Benders decomposition with taking into account short-circuit and network constraints
Shota Omi (1) (presenting author), Yasuaki Nakayama (2), Naoki Kawamoto (2)
1 Hitachi Europe Ltd, London, United Kingdom
2 Hitachi, Ltd., Hitachi, Japan

A9113MD
Power Grid Frequency Forecasting from µPMU Data using Hybrid Vector-Output LSTM network
Maitreyee Dey (1,2) (presenting author), Dilshan Wickramarachchi (1), Soumya Prakash Rana (1,3), Clarke V. Simmons (2), Sandra Dudley (1)
1 London South Bank University, London, United Kingdom
2 Neuville Grid Data, London, United Kingdom
3 University of Manchester , Manchester, United Kingdom

A8997T
Inertial Response of an Electric-Power System
Tadej Šrjanc (1) (presenting author), Rafael Mihali (1), Urban Rudež(1)
1 University of Ljubljana, Faculty of Electrical Engineering, Ljubljana, Slovenia

Multi-area power system frequency nadir prediction

Tomislav Baškarad (1) (presenting author), Ninoslav Holjevac (1), Igor Kuzle (1)

1 University of Zagreb Faculty of Electrical Engineering and Computing, Zagreb, Croatia

Edge computing and mathematical tools   *MontBlanc 3-4*

PAPER PRESENTATION

Chair : Prof. George Kariniotakis (Mines Paris, PSL University, France)

A8658AD
Impacts of spatial and temporal resolutions on the near-optimal spaces of energy system optimisation models
Antoine Dubois (1) (presenting author), Damien Ernst (1)
1 University of Liège, Liège, Belgium

A8694MV
Description of an edge computing solution to be used in Digital Substations
Maria Teresa Villen Martinez (1) (presenting author), Maria Paz Comech (2), Anibal Prada Hurtado (1), Eduardo Martinez Carrasco (1), Miguel Angel Olivan (1), Carlos Rodriguez del Castillo (3), David López Corton (4), Ruben Andrino (5)
1 CIRCE Research Centre, Zaragoza, Spain
2 Instituto Universitario de Investigación CIRCE (Fundación CIRCE-Universidad de Zaragoza), Zaragoza, Spain
3 Elewit (A company of Redeia) , Madrid, Spain
4 Redinter (A company of Redeia), Santiago de Chile, Chile

A8594HF
An Infrared Small Target Detection Algorithm Based on Edge Detection Enhancement
Hua Fan (1) (presenting author)
1 University of Electronic Science and Technology of China, Chengdu , China

A9122CS
Resilient Feature-driven Trading of Renewable Energy with Missing Data
Matias Kühnau (2), Akylas Stratigakos (1) (presenting author), Simon Camal (1), Samuel Chevalier (2), George Kariniotakis (1)
1 MINES PARIS - PSL University - Centre PERSEE, Sophia Antipolis, France
2 DTU Wind - Technical University of Denmark, Copenhagen, Denmark

A8718SM
A Two-Stage Stochastic Techno-Economic Optimal ESS Sizing Model to Enable Maximum Exploitation of RESs
Seyed Masoud Mohseni-Bonab (1,2) (presenting author), Ali Alizadeh (2), Innocent Kamwa (2), Abbas Rabiee (3)
1 Hydro Quebec Research Institute (IREQ), Varennes , Canada
2 Laval University, Quebec city, Canada
3 University of Zanjan , Zanjan, Iran

Flexibilities 2

Makalu

PAPER PRESENTATION

Chair : Dr. Pedro Faria (Research at Polytechnic Institute of Porto, Portugal)

A9157BC

Collecting French Smart Meter Data for Residential Flexibility

Benoit Couraud (1,2) (presenting author), Pierre-Jean Barre (2), Roberta Pennucci (2), Yann Rozier (2), Merlinda andoni (1), Sonam Norbu (1), David Flynn (1)
1 University of Glasgow, Glasgow, United Kingdom
2 université Côte d'Azur, Nice, France

A9130FK

Providing Curative Distribution Grid Flexibility Using Online Feedback Optimization

Florian Klein-Helmkamp (1) (presenting author), Fabian Böhm (1), Lukas Ortmann (2), Alexander Winkens (1), Florian Schmidtke (1), Saverio Bolognani (2), Florian Dörfler (2), Andreas Ulbig (1)
1 IAEW at RWTH Aachen University, Aachen, Germany
2 Automatic Control Laboratory at ETH Zurich, Zurich, Switzerland

A9173KT

Towards a flexibility analytics and optimization framework for demand side aggregators

Kostas Tsatsakis (1) (presenting author)
1 Suite5 Data Intelligence Solutions, Limassol, Cyprus

A8880SS

Robust Price-Based Demand Response Framework for Flexibility Provision in Distribution Systems

Shinya Sekizaki (1) (presenting author), Ichiro Nishizaki (1), Tomohiro Hayashida (1)
1 Hiroshima University, Higashi-Hiroshima, Japan

A8800IB

Industrial Energy Flexibility Scheduling Based on Conditional Value at Risk

Isabella Bianchini (1) (presenting author), Lea Bitterolf (2), Alexander Sauer (1,2)
1 Fraunhofer-Institut für Produktionstechnik und Automatisierung IPA, Stuttgart, Germany
2 Institut für Energieeffizienz in der Produktion (EEP), Stuttgart University, Stuttgart, Germany

Climate change   *Auditorium*

PAPER PRESENTATION

Chair : Dr. Farnoosh Rahmatian (President of NuGrid Power Corp / F.IEEE, Canada)

A8750EM
The Effect of Proliferation of Low Carbon Technologies on Steady State Operation of Distribution Network
Ester Marcel (1) (presenting author), Zhaohan Qin (1), Jovica Milanovic (1)
1 The University of Manchester, Manchester, United Kingdom

A8875SM
Weather-Based Quasi Dynamic Thermal Ratings for Power Transformers
Sergio Montana (1) (presenting author), Andrea Michiorri (1)
1 Mines Paris - PSL - Centre PERSEE, Sophia Antipolis, France

A9080WY
Resilient Operation of Long-Term Hydrogen Energy Storage-Assisted Power Systems Against Heatwave Events
Wenqian Yin (1,2) (presenting author), Yunhe Hou (1,2)
1 The University of Hong Kong, Hong Kong, China
2 HKU Shenzhen Institute of Research and Innovation, Shenzhen, China

A9052AB
Reliability-based Capacity Expansion Planning for Decarbonization with the Aid of Energy Storage
Atri Bera (1) (presenting author), Cody Newlun (1), Walker Olis (1), Tu Nguyen (1), Joydeep Mitra (2)
1 Sandia National Laboratories, Albuquerque, United States
2 Michigan State University, East Lansing, United States

A9127NY
Predict Locational Marginal Greenhouse Gas Emission Factors of Electricity with Spatial-Temporal Graph Convolutional Networks
Wenyu Wang (1), Yinglun Li (1), Nanpeng Yu (1) (presenting author)
1 University of California, Riverside, Riverside, United States

Market 2   *Kilimandjaro 1-2*

PAPER PRESENTATION

Chair : Prof. Zita Vale (Polytechnic Institute of Porto, Portugal)

A8776JO
ETSim: A Simulation Environment for Evaluating the Impacts of Autonomous Devices Participating in Local Markets and Dynamic Tariffs

Juan Carlos Oviedo Cepeda (1) (presenting author), Luis Rueda (1), Fatima Amara (1), Jean-Francois Alix (1)
1 Hydro-Québec, Montreal, Canada

A9171EJ
Assessment of a Network-Constrained P2P Energy Trading Scheme through Auction Mechanism

Emad Jamil (1) (presenting author)
1 University College Cork, Cork, Ireland

A9062MS
Quantitative Evaluation of Multi-Community Peer to Peer Electricity Trading Mechanisms

Morteza Shafiekhani (1) (presenting author), Meysam Qadrdan (1), Yue Zhou (1), Jianzhong Wu (1)
1 School of Engineering, Cardiff Unoiversity, Cardiff, UK, Cardiff, United Kingdom

A8781RD
FDIAs on Hybrid Trading Transactive Energy Markets: Attacks, Impacts, and Prevention

Rumpa Dasgupta (1) (presenting author), Amin Sakzad (1), Carsten Rudolph (1), Rafael Dowsley (1)
1 Dept of Software Systems and Cybersecurity, Monash University, Melbourne, Australia

A9159MB
Understanding the Disruptive Effects of Rooftop Solar PVs on Electric Utilities: Implications for the Power Industry

Mohammadreza Barazesh (1) (presenting author), Mohammad Hossein Javidi Dasht Bayaz (1)
1 Ferdowsi University of Mashhad, Mashhad, Iran

Energy Communities 2

MontBlanc 1-2

PAPER PRESENTATION

Chair : Dr. Vincent Debusschere (Assoc. Prof. at Grenoble INP | Univ. Grenoble Alpes, France)

A8684LB
Integrating Distribution Grid Characteristics in Multi-Energy System Optimization Modeling
Luis Böttcher (1) (presenting author), Steffen Kortmann (1), Julian Saat (1), Henrik Schwaeppe (1), Andreas Ulbig (1), Tim Felling (2), Oliver Levers (2), Philipp Fortenbacher (2)
1 RWTH Aachen University, Aachen, Germany
2 Amprion GmbH, Dortmund, Germany

A8954FP
Case Study of Shared Solar Applications in a Swedish Energy Community
Filippo Padovani (1) (presenting author), Monika Topel Capriles (1), Björn Laumert (1)
1 KTH Royal Institute of Technology, Stockholm, Sweden

A8737MP
Flexibility Valorization in Energy Communities: Grid Constraints Impact and Mitigation
Muhammad Andy Putratama (1) (presenting author), Rémy Cleenwerck (1,2), Jan Desmet (2), Maarten Messagie (1), Thierry Coosemans (1)
1 EVERGi, MOBI Research Center, Vrije Universiteit Brussel, Brussels, Belgium
2 EELab/Lemcko Research Group, Ghent University, Kortrijk, Belgium

A9084LS
Impact of retail electricity prices and grid tariff structure on the operation of resources scheduling in Renewable Energy Communities
Louise Sadoine (1) (presenting author), Zacharie De Grève (1), Thomas Brihaye (1)
1 University of Mons, Mons, Belgium

A8863VT
Optimal Operation of Battery Storage Systems in Renewable Energy Communities
Pablo De Juan - Vela (1) (presenting author), Asja Alic (1), Vincenzo Trovato (1,2)
1 University of Trento, Trento, Italy
2 Imperial College London, London, United Kingdom

A9124LT
Flexibility of Multi-Energy Systems Exploited as a Market Service: An overview
Leticia Tomas Fillol (1) (presenting author), Goncalo Mendes (1), Antti Pinomaa (1), Samuli Honkapuro (1)
1 LUT, Lappeenranta, Finland

Stabilities 2 : Small signal and frequency stabilities

Kilimandjaro 3-4

PAPER PRESENTATION

Chair : Prof. Bogdan Marinescu (Centrale Nantes, France)

A8704PZ

A Conceptual Benchmark for the Study of Interactions and Inter-area Oscillations in Power Systems With High Power Electronics Penetration

Pamela ZOGHBY (1,2) (presenting author), Bogdan MARINESCU (2), Antoine ROSSE (1), Gregoire PRIME (1)
1 EDF R&D, Palaiseau, France
2 Ecole Centrale Nantes, Nantes, France

A9094BE

Improving Frequency Stability Assessment through K-Nearest Neighbors and Machine Learning Techniques

Bwandakassy Elenga Baningobera (1) (presenting author), Irina Oleinikova (1)
1 Norwegian University of Science and Technology (NTNU), Trondheim, Norway

A8918AR

Real-Time Power System Stability Monitoring using Convolutional Neural Networks

Arvid Rolander (1) (presenting author), Xavier Weiss (1), Robert Eriksson (1,2), Lars Nordström (1)
1 KTH, Stockholm, Sweden
2 Svenska Kraftnät, Sundbyberg, Sweden

A9054KK

A Wavelet Based Synchronized Waveform Measurement Unit Algorithm

Kevin Kawal (1) (presenting author), Qiteng Hong (1), Panagiotis Papadopoulos (1), Steven Blair (2), Campbell Booth (1,2)
1 University of Strathclyde, Glasgow, United Kingdom
2 Synaptec, Glasgow, United Kingdom

A8973JV

Small-Signal Stability of Power Systems with a Mix of Synchronous Generators and Inverter-Based Resources

Jared Vochoska (1,2) (presenting author), Muhammad Sharjeel Javaid (1), Zohaib Akhtar (1), Balarko Chaudhuri (1)
1 Imperial College London, London, United Kingdom
2 Electric Power Engineers, Austin, United States

A8834JK

Classification of Power System Stability Using Deep Learning

Jongju Kim (1), Heungseok Lee (2), June Ho Park (2,3) (presenting author)
1 Korea Southern Power Company, Busan, Korea (Democratic People's Republic of)

Volt var controls

MontBlanc 3-4

PAPER PRESENTATION

Chair : 0

A9144IV

Application Experiences of Low Voltage Inline Voltage Regulator with Significant Photovoltaic Generation

Istvan Vokony (1), Istvan Taczi (1), Janos Csatar (1), Balint Hartmann (1), Andras Dan (1), Peter Mark Sores (1) (presenting author)

1 Budapest University of Technology and Economic, Budapest, Hungary

A9071EM

The Impacts of Spatially Distributed Demand Growth and Load Modelling on Distribution Network Operation

Ester Thomas Marcel (1), Saad Alyoubi (1), Airam Perez Guillen (1) (presenting author), Jovica Milanovic (1), Tee Shengji (2)

1 The University of Manchester, Manchester, United Kingdom

2 Scottish Power Energy Networks, Glasgow, United Kingdom

A9125SA

Capacitor Coupled Voltage Transformer Defect Identification in the Presence of Tap Changer

Sajjad Asefi (1) (presenting author), Leinakse Madis (1), Kilter Jako (1), Landsberg Mart (2)

1 Tallinn University of Technology , Tallinn , Estonia

2 Elering AS, Tallinn , Estonia

A9096SD

Comparative Analysis of Grid Forming Inverters based Power Systems in Phasor Domain and Electromagnetic Transient Domain

Said DAOUDI (1) (presenting author), Thai Phuong DO (1)

1 Univ Grenoble Alpes, CEA, Liten, Campus Ines, 73375 Le Bourget-du-Lac, France

A9141LD

Converter Interaction Identification using Open-Loop Mode Transition Criterion

Lokesh Kumar Dewangan (1) (presenting author), Francesco Giacomo Puricelli (1), Jef Beerten (1)

1 KU Leuven, Leuven, Belgium

A8895GP

Effect of RES current injection requirements on Voltage Stability Margin

Giorgos Prionistis (1) (presenting author), Panos Mandoulidis (1), Costas Vournas (1)

1 National Technical University of Athens (NTUA), Athens, Greece

Flexibilities 3

Makalu

PAPER PRESENTATION

Chair : Dr. Masoud Mohseni-Bonab (Senior Researcher at Hydro Quebec Research Institute / Adjunct Prof. at Laval Univ., Canada)

A8688HP

Intraday Operation Planning Performance in Jawa Bali System to Ensure System Flexibility in Mitigating High Integration of Variable Renewable Energy (VRE)

Ahmad Murdani (1) (presenting author), Handika Putra (1), Johanes Hendra Febrianto Rajagukguk (1)
1 PT PLN (Persero), Jakarta, Indonesia

A9172AZ

After Diversity Maximum Demand and Daily Load Profiles of Maximum Demand for Uncontrolled Residential EV Charging

As'ad Zakaria (1) (presenting author), Chengyan Duan (1), Haroon Zafar (1), Sasa Djokic (1)
1 The University of Edinburgh, Edinburgh, United Kingdom

A8717JT

Day-Ahead Electricity Prices Volatility with LSTM Probabilistic Forecasting

Julius Trebbien (1) (presenting author), Sebastian Pütz (2), Benjamin Schäfer (2), Heidi S. Nygård (3), Leonardo Rydin Gorjão (3), Dirk Witthaut (1)
1 Forschungszentrum Jülich, Jülich, Germany
2 Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany
3 Norwegian University of Life Sciences, Ås, Norway

A8850JR

Uncertainty-Aware Energy Flexibility Quantification of a Residential Building

Julie Rousseau (1,2) (presenting author), Hanmin Cai (2), Philipp Heer (2), Kristina Orehounig (2), Gabriela Hug (1)
1 Power Systems Laboratory, ETH Zürich, Zürich, Switzerland
2 Urban Energy Systems Laboratory, Empa, Dübendorf, Switzerland

A9028PF

Local Energy Market Competition Approach for Demand Response Events

Catia Silva (1), Pedro Faria (1) (presenting author), Zita Vale (1)
1 Polytechnic of Porto, Porto, Portugal

A8753MS

Quantifying Demand Side Flexibility in the Residential Sector: A Coherent and Abbreviated Procedure for Categorization and Measurement

Mohammadreza Shekari (1) (presenting author), Daniel Koster (1), André Guimaraes Madureira (1)
1 Environmental Research and Innovation (ERIN) department, Luxembourg Institute of Science and Technology (LIST), Esch-sur-Alzette, Luxembourg

Congestion and restoration

Auditorium

PAPER PRESENTATION

Chair : 0

A9117FG

Operational planning of DER considering novel congestion management markets

Felix Gaumnitz (1) (presenting author), Andreas Ulbig (1)

1 RWTH Aachen, Aachen, Germany

A8734MA

MILP-based Service Restoration in Prosumer-based Active Distribution Networks

Monir Ashrafi (1,2) (presenting author), Ali Abbaspour-Tehranifard (2), Mahmud Fotuhi-Firuzabad (2), Sajjad Fattaheian-Dehkordi (2,3), Seddik Bacha (1), Raphael Caire (1)

1 University Alpes of Grenoble, Grenoble, France

2 Sharif university of technology, Tehran, Iran

3 Aalto University, Espoo, Finland

A9056AV

Simulation of a congestion management utilizing load-side flexibilities within the distribution grid

Alexander Vanselow (1) (presenting author), Christian Fröhlich (1), Simon Krahl (1), Christoph Wirtz (1), Albert Moser (2)

1 FGH e. V., Aachen, Germany

2 IAEW RWTH Aachen University, Aachen, Germany

A8745AM

Optimal Countermeasures to Contingencies in Transmission Systems

Amer Mesanovic (1) (presenting author), Sarah Braun (1), Mirsad Cosovic (2)

1 Siemens AG, Munich, Germany

2 Faculty of Electrical Engineering, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

A9092FS

Handling protection-related uncertainties in simulations of fast cascading outages

Frédéric Sabot (1) (presenting author), Pierre-Etienne Labeau (1), Pierre Henneaux (1)

1 Université libre de Bruxelles, Bruxelles, Belgium

A8869RC

Smart Meter-Based Re-Phasing for Voltage Imbalance Enhancement Through Topology Reconstruction

Rémy Cleenwerck (1,2) (presenting author), Wouter Parys (1), Muhammad Andy Putratama (1), Jan Desmet (2), Thierry Coosemans (1)

1 Vrije Universiteit Brussel, Brussels, Belgium

2 Ghent University, Kortrijk, Belgium

POSTER SESSIONS

Poster session – P1   *Atrium*

COMPONENTS

A8619PR
Analysis of PVT hybrid roof-top systems for the energy supply of electricity and heat for buildings

Paul Maximilian Röhrig (1,2) (presenting author), Jasper Martens (1), Nils Körber (1,2), Marcel Kurth (1), Andreas Ulbig (1,2)
1 RWTH Aachen IAEW, Aachen, Germany
2 Fraunhofer FIT, Aachen, Germany

A8866PB
Hardware-in-the-loop Testing of a Deep Deterministic Policy Gradient Algorithm as a Microgrid Secondary Controller

Pedro Barbalho (1) (presenting author), Vinicius Lacerda (2), Ricardo Fernandes (3), Denis Coury (1)
1 São Carlos School of Engineering - University of São Paulo, São Carlos, Brazil
2 Centre d'Innovacio Tecnològica en Convertidors Estatics i Accionaments - Universitat Politècnica de Catalunya, Barcelona, Spain
3 Federal University of São Carlos, São Carlos, Brazil

A8914MN
Extended Kalman Filter for PEM Electrolyzer Condition Monitoring

Marina Nascimento Souza (1) (presenting author), Aline Luxa (1), Georg Pangalos (1), Lennard Giesenberg (1), Gerwald Lichtenberg (2)
1 Fraunhofer Institute for Wind Energy Systems IWES, Hamburg, Germany
2 Hamburg University of Applied Sciences (HAW), Hamburg, Germany

A9003JS
Estimation of production losses for curtailed photovoltaic plants

Jonathan Scheidegger (1) (presenting author), Peter Cuony (2)
1 EPFL, Lausanne, Switzerland
2 Groupe E SA, Granges-Paccot, Switzerland

A9087CN
Medium Voltage Shunt Reactor Design and Switching

Christian NGNIE NGONSEU (1) (presenting author), Marc PETIT (1), Martin HENNEBEL (1), Didier LARRAILLET (2), Fabien PETIT (2)
1 Centralesupélec, Université Paris Saclay, Paris, France
2 Srd, Poitiers, France

A9100GA
Ratio of Load Curtailment Based Detection of the Maximum Risk of Substation Devices

Guido Andreesen (1) (presenting author), Madis Leinakse (1), Jako Kilter (1), Mart Landsberg (2)
1 TalTech, Tallinn, Estonia
2 Elering AS, Tallinn, Estonia

A8618PG

Fast load-flow calculations based on spanning trees

Pierrick Guichard (1) (presenting author), Nicolas Retière (2), Didier Mayou (3)
1 Univ. Grenoble Alpes, CNRS, Institut Néel, F-38042, Grenoble, France
2 Univ. Grenoble Alpes, CNRS, Grenoble INP, G2Elab, F-38000, Grenoble, France
3 Univ. Grenoble Alpes, CNRS, Institut Néel, F-38042, Grenoble, France

A8668KA

The focus of this paper is to predict the hourly time series of the accepted number of block order bids and energy quantities in the Greek day ahead electricity market, using CNN models and feature generation and feature selection methods.

Kyriakos Andresakis (1) (presenting author), Aris Dimeas (1), Nikos Hatziargyriou (1)
1 ECE NTUA, Athens, Greece

A8733VG

Flexibility Management For Enhanced Distribution Grid Control And Operation - The Case of FEVER Project

Vinicius Gadelha Teixeira Filho (1) (presenting author), Andrea Bragantini (1), Andreas Sumper (1), Joaquim Melendez i Frigola (2), Isidoros Kokos (3), Joana Alsina Sanchéz (4)
1 Universitat Politécnica de Catalunya, Barcelona, Spain
2 Universitat de Girona, Girona, Spain
3 Intracom Telecom, Athens, Greece
4 Estabanell Distribució, Granollers, Spain

A8735AB

Geomagnetic Disturbance Uncertainty Quantification Modeling: An Electromagnetic Transient and Steady-State Simulation based Approach

Arturo Bretas (1,2) (presenting author)
1 University of Florida, Gainesville, United States
2 Pacific Northwest National Laboratory, Gainesville, United States

A8768as

Improving Grid Resilience & Protection Performance based on Geographical Diversity and Tripping Statistical Analysis

Alok Singh (1) (presenting author), AKASH Modi (1)
1 Grid controller of india , ERLDC, Kolkata, India

A8799SK

Comparison of Adaptive Inertia Emulation Control Strategies for HVDC Systems Applications

Gruender Andreas (1), Shahab Karrari (1) (presenting author), Jungkunz Clemens (1)
1 Siemens Energy, Erlangen, Germany

A8805LP

Open-Source Power System Dynamic Models and Test Cases in Modelica: an application example

Luis David Pabon Ospina (1) (presenting author), Sören Lohr (1), Maria Nuschke (1), Diana Strauß-Mincu (1), Mathilde Bongrain (2), Quentin Cossart (2), Marco Chiaramello (2)
1 Fraunhofer IEE, Kassel, Germany
2 RTE Re´seau de Transport d'E´lectricite, Paris, France

A8810MG

A flexible architecture for performance and stability assessment in converter-dominated distribution grids

Marco Giuntoli (1) (presenting author), Alberto Bolzoni (2), Mats Larsson (2), Ravikant Pandey (3), Naoki Kawamoto (3), Shinya Ohara (3)
1 Hitachi Energy Germany AG, Mannheim, Germany
2 Hitachi Energy Switzerland Ltd, Baden-Dättwill, Switzerland
3 Hitachi Ltd., Ibaraki, Japan

A8823CW

A Switch Model for Emulation of Zero Current Switching in Dynamic Phasor

Christoph Wirtz (1) (presenting author), Marian Weßelmann (2), Max Murglat (1), Alexander Vanselow (1), Simon Krahl (1), Albert Moser (3)
1 FGH e.V., Aachen, Germany
2 RWTH Aachen University, Aachen, Germany
3 IAEW at RWTH Aachen University, Aachen, Germany

A8839HM

Safe Multi-Agent Reinforcement Learning for Price-Based Demand Response

Hannah Markgraf (1) (presenting author), Matthias Althoff (1)
1 Technical University of Munich, Munich, Germany

A8856MS

Experimentally validated resonance instabilities in distribution grids with high inverter shares

Sandor Simon (1), Markus Stroot (1) (presenting author), Andreas Ulbig (1)
1 Institute of High Voltage Equipment and Grids, Digitalization and Energy Economics (IAEW) at RWTH Aachen University, Aachen, Germany

A8864SK

Reconfiguration Method for Low Voltage Distribution Networks

Sari Kerckhove (1,2,3) (presenting author), Reinhilde D'hulst (2,3), Dirk Van Hertem (1,2)
1 Electrical Engineering Department KU Leuven, Kessel-Lo, Belgium
2 EnergyVille, Genk, Belgium
3 VITO, Genk, Belgium

A8897SE

Open-Source EMT Model of Grid-Forming Converter with Industrial Grade SelfSync and SelfLim Control

Simon Eberlein (1) (presenting author), Peter Unruh (1), Tobias Erckrath (1)
1 Fraunhofer IEE, Kassel, Germany

A9015IH

Optimal Grid Sections for a Temporary Emergency Back-Up Power Supply in Islanded Grid Mode

Imke Hebbeln (1) (presenting author), Maximilian Rose (1), Michael Hübner (1), Lutz Hofmann (2)
1 Schleswig-Holstein Netz AG, Quickborn, Germany
2 Institute of Electric Power Systems, Leibniz University Hanover, Hanover, Germany

A9089VI

Impact of line length, EV and PV on LV Grid topology identification based on voltage correlation

Victor Bossard (1) (presenting author), Lena Joyeux (1), Sylvain Marie (1), Thi Thu Ha Pham (1), Regis Vautrin (1), Carl Mugnier (1), Theo Lagarde (1), Vanya IGNATOVA (1)
1 Schneider Electric, Grenoble, France

A9135HA

Concept of a new three-stage power system operation regime based on voltage angle control

Hassan Alhomsi (1) (presenting author), Franz Linke (1), Dirk Westermann (1)

1 Technische Universität Ilmenau, Ilmenau, Germany

A9142SO

LVDC microgrid topology, control and protection in the EU funded project Hyperride

Sergio Orlando (1) (presenting author), Stefan Dan Costea (1)

1 Eaton, Prague, Czechia

A9162MP

Detecting suspicious behaviour in power consumption with Fuzzy Logic

Matej Pecjak (1) (presenting author), Maria Symponi (2), Dimitrios Stratogiannis (2)

1 University of Ljubljana, Faculty of Electrical Engineering, Ljubljana, Slovenia
2 Hellenic Electricity Distribution Network Operator (HEDNO) S.A, Athens, Greece

A9182SB

Modeling and Pre-installation Stability Assessment Of a Real Grid-connected MV DC Microgrid With 100% Power Electronics Based Generation

Sameh Betamony (1,2) (presenting author), Thai-Phuong Do (1), Jérôme Buire (2), Anthony Bier (1), Quoc Tuan Tran (1), Seddik Bacha (2)

1 French Alternative Energies and Atomic Energy Commission (CEA). , Greonble, France
2 Grenoble Electrical Engineering Laboratory (G2Elab), Grenoble, France

A8719FS

Power Quality Challenges by Integrating Modern Customers into the Low-Voltage Grid

Farhad Safargholi (1) (presenting author), David Kühnert (1)
1 Chemnitz University of Technology, Chemnitz, Germany

A8848KK

Evaluation of Countermeasures Against Harmonic Disturbances Caused by Agricultural Heat Pumps

Kyohei Kawamura (1) (presenting author), Fukushima Kentaro (1), Okada Naotaka (1), Okawa Kohei (2)
1 Central Research Institute of Electric Power Industry, Yokosuka, Japan
2 Shikoku Electric Power Transmission & Distribution Company, Inc., Takamatsu, Japan

A8852ES

Analysis of the impact of harmonics and a DG on a novel earth-fault location method in MV distribution networks with compensated neutral grounding

Elie SALHAB (1,2) (presenting author), Quentin LEBOURG (1), Dominique CROTEAU (1), Trung Dung LE (2), Marc PETIT (2)
1 EDF R&D, Palaiseau, France
2 CentraleSupélec GeePs, Gif-sur-Yvette, France

A8885FN

A Learning Testbed for False Data Injection Attacks

Filip Natvig (1) (presenting author), Göran Ericsson (1), Lars Nordström (2)
1 Uppsala University, Uppsala, Sweden
2 KTH Royal institute of technology, Stockholm, Sweden

A9081MD

Digital Privacy and Cyberphysical Security Perspectives of Grid-Edge Power Systems and Markets

Umit Cali (1), Marthe Dynge (1) (presenting author), Faria Kamal (2), Rajnish Deo (2), Badrul Chowdhury (2), Robert Cox (2)
1 Norwegian University of Science and Technology, Trondheim, Norway
2 University of North Carolina at Charlotte, Charlotte, NC, United States

A9095GN

Comparison of Machine Learning-Based Methods for High Impedance Fault Detection in Distribution Systems

Gabriela Nunes Lopes (1) (presenting author), Maurício Pavani da Silva (1), José Carlos Melo Vieira (1)
1 University of São Paulo (USP), São Carlos School of Engineering (EESC), São Carlos, Brazil

A9129AS

Optimal Time Coordination of Definite-Time Overcurrent Relays for Adaptive Protection Systems

Antigona Selimaj (1) (presenting author), Immanuel Hacker (1), Ronja Steinfurth (1), Andreas Ulbig (1)
1 Institute for High Voltage Equipment and Grids, Digitalization and Energy Economics at RWTH Aachen University, Aachen, Germany

TOWARDS THE LARGE SCALE DEPLOYMENT OF NEW SOLUTIONS

Microgrid realtime control for transient modes: development, simulation and experimental validation in full-scale

Thai Phuong DO (1) (presenting author)

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Poster session – P2

Atrium

MARKET DESIGN, END-USERS, REGULATION, PROSUMERS

A8744AO

Emerging Role of Industry 5.0 Digital Twins in Demand Response Electricity Market and Applications

Abiodun Onile (1) (presenting author), Juri Belikov (1), Petlenkov Eduard (1), Yoash Levron (2)
1 Tallinn University of Technology, Tallinn, Estonia
2 Technion israel institute of technology, Haifa, Israel, Israel

A8782AS

The impact of energy crisis on the residential consumers' consumption behavior based on a Finnish case study

Araavind Sridhar (1,2) (presenting author), Samuli Honkapuro (1), Fredy Ruiz (2), Salla Annala (2), Annika Wolff (1)
1 LUT University, Lappeenranta, Finland
2 Politecnico di Milano, Milan, Italy

A8825TK

On the Definition and Classification of Power System Flexibility

Taulant Kërçi (1) (presenting author)
1 Ireland electric transmission system operator, EirGrid plc, Dublin, Ireland

A8934YB

Improved RC Model for Air Conditioning Load - A Case Study

Yahia Baghzouz (1) (presenting author)
1 UNLV, Las Vegas, United States

A8953MG

Costs Allocation in Energy Communities: An Insight on Users' Preferences

Maria Victoria Gasca Segura (1) (presenting author), Remy Rigo-Mariani (1), Vincent Debusschere (1), Yousra Sidqi (2), Cedric Clastres (3)
1 Univ. Grenoble Alpes, CNRS, Grenoble INP, G2Elab, Grenoble, France, Grenoble, France
2 Lucerne University of Applied Sciences and Arts, Lucerne, Switzerland
3 Univ. Grenoble Alpes, Grenoble INP, GAEL - Laboratoire d'Economie Appliquee de Grenoble, Grenoble, France

A8964CS

How Much Energy Do Bounded Rational Participants Share in Vehicle-to-Grid (V2G)?

Chenxi Sun (1) (presenting author)
1 Shenzhen Institute of Artificial Intelligence and Robotics for Society, Shenzhen, China

A9022ZV

Optimizing House Energy Management with MILP Considering Shifting of Electric Appliances and Battery Storage System

Ricardo Faia (1) (presenting author), Pedro Faria (1), Zita Vale (1)
1 Polytechnic of Porto, Porto, Portugal

A9121IG

Real-life demonstration of flexibility provision by smart charging of EVs and stationary battery storage

Ibrahim Gazioglu (1) (presenting author), Jaikrishnan Pillai (2), Le Anh Tuan (3)
1 Osmangazi Electricity Distribution Company, Eskisehir, Turkey
2 Bovlabs SAS, Aix-en-Provence, France
3 Chalmers University of Technology, Gothenburg, Sweden

A9126MT

The Role of Hydrogen Energy in Future of the Power Systems: Study of Resource Adequacy in Finland

Mehdi Tavakkoli (1) (presenting author), Amin Moghimy Fam (2), Ilkka Jokinen (2), Matti Koivisto (3), Poul Sorensen (3), Matti Lehtonen (2)
1 Trading and Asset Optimization, Fortum, Espoo, Finland
2 Department of Electrical Engineering and Automation, Aalto University, Espoo, Finland
3 Department of Wind and Energy Systems, Technical University of Denmark, Roskilde, Denmark

A9145NE

Design of a virtual power plant using slower domestic resources with minimum end-user impact

Nicholas Etherden (1,2) (presenting author), Petersson Albert (1)
1 Vattenfall R&D, Stockholm, Sweden
2 Luleå University of Technology, Skellefteå, Sweden

A9153DM

Comparison of different types of users in Sweden mitigating energy poverty and utilizing green technologies

Daniel Månsson (1) (presenting author)
1 KTH Royal Institute of Technology, Stockholm, Sweden

A9163NE

Home charging in Scandinavia - an empirical study with cloud-connected EV data

Nicholas Etherden (1) (presenting author), Tavares de Oliveira Taís (1)
1 Luleå University of Technology, Skellefteå, Sweden

A9168WA

Flexibility of IoT-based Smart Houses for Enhancing Distribution System Margins

Yaser Ahmed (1), Mohammed Aljarboa (1) (presenting author), Walied Alfraidi (1)
1 Imam Mohammad Ibn Saud Islamic University, Riyadh, Saudi Arabia

A9185NR

Evaluating the Self Balancing Potential of Rooftop Photovoltaic Systems and its Impact on the Net Demand Profile

NIDA RIAZ (1) (presenting author), Repo Sami (1), Lindfors Anders (2)
1 Tampere University, Tampere, Finland
2 Finnish Meteorological Institute, Helsinki, Finland

PLANNING

A8598AG

Techno-Economic-Environmental Analysis for Net-Zero Sustainable Residential Buildings

Ankita Garg (1) (presenting author), Gagangeet Singh Aujla (1), Hongjian Sun (1)
1 Durham University, Durham, United Kingdom

A8659CC

Designing AC Low-Voltage Topologies for a Non-Electrified Area - A Case Study in Cambodia

Chhith Chhlonh (1), Marie-Cécile Alvarez-Herault (1), Vannak Vai (2), Bertrand Raison (1) (presenting author)
1 University of Grenoble Alpes, Grenoble, France
2 Institute of Technology of Cambodia, Phnom Penh, Cambodia

A8690WP

EV FAST CHARGER OF EV TWO WHEELS TO SUPPORT THE DEVELOPMENT OF EV ECOSYSTEM AND REDUCE CARBON GAS

WAHYU PUTRA SEJATI (1) (presenting author), Eko Yuwono (1), Fikri Praditya (1)
1 PT PLN (PERSERO), JAKARTA, Indonesia

A8774DO

Linear Three-Phase Power Flow for Unbalanced Power Distribution Systems With Distributed Generation and Approximating Distribution Losses

MIGUEL SALTOS (1), DIEGO ORTIZ (1) (presenting author), Jacqueline Llanos (1)
1 UNIVERSIDAD DE LAS FUERZAS ARMADAS ESPE, SANGOLQUI, Ecuador

A8820MH

Energy Resources Scheduling in Energy Communities: A comparison between Mixed Integer Linear Programming and Hybrid-adaptive Differential Evolution with decay function

Gomes Eduardo (1,2), Pereira Lucas (1,2), Morais Hugo (1) (presenting author)
1 INESC-ID-Instituto de Engenharia de Sistemas e Computadores-Investigaçãao e Desenvolvimento, Department of Electrical and Computer Engineering, Instituto Superior Técnico-IST, Universidade de Lisboa,, Lisbon, Portugal
2 Interactive Technologies Institute, LARSyS, Universidade de Lisboa, Lisbon, Portugal

A8838QR

Prospective bottom-up modelling of industry: what place for electrification in a cost optimised trajectory ?

Quentin Raillard--Cazanove (1) (presenting author), Robin Girard (1), Antoine Rogeau (1)
1 MINES Paris - PSL University, Sophia-Antipolis, France

A8892AC

Photovoltaic Power Prediction from Medium-Range Weather Forecasts: a Real Case Study

Alessandro Ciocia (1) (presenting author), Gianfranco Chicco (1), Alessandro Gasperoni (1), Gabriele Malgaroli (1), Filippo Spertino (1)
1 Politecnico di Torino, Torino (TO), Italy

A8960ED

Smart Meter Data-Driven Voltage Forecasting Model for a Real Distribution Network Based on SCO-MLP

Emrah Dokur (1) (presenting author), Ibrahim Sengor (2), Nuh Erdogan (3), Ugur Yuzgec (4), Barry P. Hayes (2)
1 Department of Electrical Electronics Engineering Bilecik Seyh Edebali University, Bilecik, Turkey
2 MaREI the SFI Research Centre University College Cork , Cork, Ireland
3 School of Science and Technology Nottingham Trent University , Nottingham, United Kingdom
4 Department of Computer Engineering Bilecik Seyh Edebali University, Bilecik, Turkey

A9007KS

Optimized photovoltaic power forecast using k-means clustering based error reduction

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STRATEGIES FOR THE MANAGEMENT OF POWER SYSTEMS

A8616JC

On the Estimation of Phase-Angles in European-Type Distribution Grids

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A8666TS

Automated Tertiary Voltage Control in Transmission System

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A8700FA

Optimal Energy Management System Using Probabilistic Day-ahead Forecasting

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A8705XZ

Resilience Enhancement of Multiple Energy Hubs via Coordinated EV Routing and Scheduling

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A8778MK

Impact of Substituting Hydrogen for Natural Gas on Compressor Station Operation in Gas Networks

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A8796HL

Novel DER and OLTC Management Scheme for Coordinated TSO-DSO Flexibility Services Provision

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A8833KP

Topological Error Localization in Power Distribution Networks Based on WLAV State Estimation

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A8884TJ

Practical approach for replacement concept in curative system operation

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A8890YB

On Virtual Complex Impedance Droop Control of
VSC-Based Islanded Microgrids

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A8896TG

Impact of Reconfiguration on Optimal Storage Deployment in Active Distribution Networks

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A9037KM

Day-Ahead Optimal Resilient Energy Management for Grid-Connected Prosumer Microgrids

Kihembo Samuel Mumbere (1) (presenting author), Yutaka Sasaki (1), Yoshifumi Zoka (1), Naoto Yorino (1), Ahmed Bedawy (1), Chiraz Krifa (1), Yoshiki Tanioka (1)
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A9091MN

Black-start of microgrids: Insights based on demonstration sites in Europe and India

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A9097EE

Evaluation of Photovoltaic Short-term Forecast Benefits for Isolated System Operation

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A9149IV

Use of sensitivity factors to support congestion zoning on flexibility markets

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A8878BR

Optimizing Hybrid Power Systems for Sustainable
Maritime Transportation

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