CONFERENCE PROGRAM

2025 8th International Conference on Renewable Energy and Power Engineering (REPE)

2025 第 8 届可再生能源和电力工程国际会议

Beijing, China | September 27-29, 2025

扫码添加会议秘书微信号 REPE 2025，获取更多信息!

Conference Venue: Kuntai Royal Hotel 北京昆泰嘉华酒店

Address: Adress: No. 12 B, Chaoyangmenwai Street, Beijing (北京朝阳门外大街乙 12 号)

Co-sponsored by | 主办单位

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电机工程与应用电子技术系
Department of Electrical Engineering
Tsinghua University

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NWU

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WELCOME MESSAGE

We are pleased to welcome you to 2025 8th International Conference on Renewable Energy and Power Engineering (REPE), which will be held in Beijing, China during September 27-29, 2025, co-sponsored by IEEE and Tsinghua University, hosted by the Department of Electrical Engineering at Tsinghua University, co-hosted by the Institute of Engineering Thermophysics(Chinese Academy of Sciences) and State Key Laboratory of Power System Operation and Control (Tsinghua University).

The REPE conference covers a broad range of topics, including renewable energy technologies, power generation, transmission and distribution systems, energy storage, and energy efficiency. The conference provides opportunities for researchers, engineers, academicians, and industrial professionals from around the world to present their research results and development activities in renewable energy and power engineering.

This year's program will consist of 4 keynote speeches from Prof. Wei Xu, (IEEE Fellow, Chinese Academy of Sciences, China), Prof. Chengbin Ma (IEEE Fellow, Shanghai Jiao Tong University, China), Prof. Mingcong Deng (IEEE Fellow, Tokyo University of Agriculture and Technology, Tokyo, Japan), Prof. Minxiao Han (North China Electric Power University, China), another 9 invited talks, 9 parallel sessions (including 3 special sessions, 2 onsite oral sessions, 3 online oral sessions and 1 poster session).

It is pleasing to note that the agenda of this conference covers a wide range of interesting topics related to all theoretical and practical aspects, but not limited to Renewable Energy and Power Engineering, etc.

Last but not least, our deepest gratitude goes to the Advisory Board, Organizing Committee, International Scientific Committee, institutions, and volunteer who have directly and indirectly supported the success of this seminar. Wish you a very productive conference with exciting and encouraging discussions and exchange of knowledge so that together we can anticipate a future of ground-breaking knowledge, research, and technology.

Finally, we wish you a very successful conference! Hope you will enjoy your stay to Beijing.

Conference Organizing Committee

GENERAL INFORMATION

◆ **Conference Venue**

Kuntai Royal Hotel 北京昆泰嘉华酒店

http://www.kuntairoyalhotel.com/index.html

Adress: No. 12 B, Chaoyangmenwai Street, Beijing
(北京朝阳门外大街乙 12 号)
Tel.: (86-10) 5828 5588; 15010157020 (杨经理)
(预定房间可联系杨经理报会议"REPE 2025"享受团队价)

◆ **Onsite Registration**

Arrive at the registration desk→ Inform the staff of your paper ID→ Sign-in→ Claim your conference kit.

◆ **Devices Provided by the Organizer**

Oral/Special Session: Laptops (with MS-Office & Adobe Reader) / Projectors & Screen / Laser Sticks

Poster Session: Poster display stand, clear tape, mark pen.

◆ **Materials Provided by the Presenter**

Oral Session: Slides (pptx or pdf version). Format 16:9 is preferred.

Poster Session: A1 size Printed poster. **Please print your poster before your arrival.**

请报告人自行打印海报，并于汇报当天进行张贴。

◆ **Duration of Each Presentation**

Keynote Speech: 35min, including Q&A.

Invited Talk: 20min, including Q&A.

Special Session: 10min, including Q&A.

Online Session: 10min, including Q&A.

Poster Session: 10min, including Q&A.

◆**NOTICE**

• Please wear your delegate badge (name tag) for all the conference activities. Lending your participant card to others is not allowed.

• Please take good care of your valuables at any time during the conference. The conference organizer does not assume any responsibility for the loss of personal belongings of the participants during conference day.

会议期间请务必随身携带贵重物品，会议不对任何物品丢失负责。

• Accommodation is not provided. Delegates are suggested make early reservation.

参会者请提前自行预订酒店房间。

• Please show the badge and meal coupons when dining.

就餐时请同时出示代表证与餐券。

◆**Zoom Meeting ID**

Room	Meeting ID	Meeting Link	
A	819 6539 5767	https://us02web.zoom.us/j/81965395767	✧ Zoom Download: here ✧ Guide for new users: here ✧ Conference Banner: here ✧ Zoom Background: here *We suggest you to download the Zoom platform in advance.*
B	817 0799 8582	https://us02web.zoom.us/j/81707998582	

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• We recommend that you install the Zoom platform on your computer. New Zoom users can skip the registration step and enter the meeting ID directly to participate the online session.

Zoom 新用户无需注册，输入会议号 meeting ID 即可参会。

• Prior to the formal conference, presenter shall join the test room to make sure everything is on the right track.

• Please rename your Zoom Screen Name in below format before entering meeting room

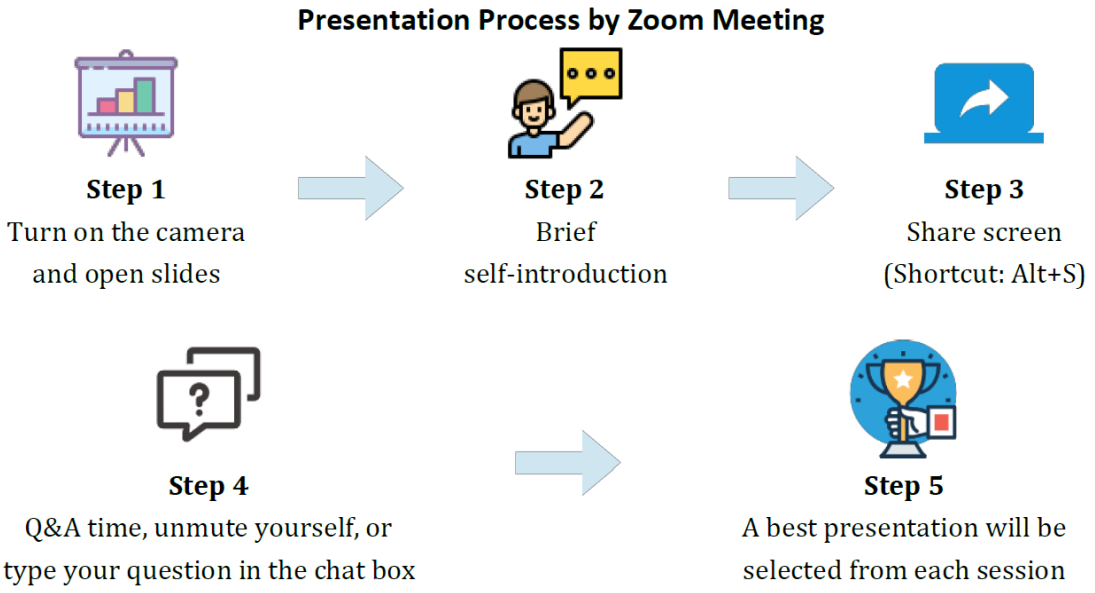
Name Setting:

Keynote Speaker: KN-Name　　Committee: Position-Name　　Author: Paper ID-Name

Delegate: Delegate-Name

• Every presenter has 10 minutes, including Q & A.

• The best presentation certificate and all authors' presentation certificates will be sent after conference by email.



CONFERENCE COMMITTEE

(in no particular order)

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AGENDA OVERVIEW

Onsite: Venue in Beijing: Kuntai Royal Hotel 北京昆泰嘉华酒店

Online: Zoom Meeting ID: Room A: 819 6539 5767 Link: https://us02web.zoom.us/j/81965395767
Room B: 817 0799 8582 Link: https://us02web.zoom.us/j/81707998582

September 27 | Saturday (GMT+8)		
10:00~17:00	Onsite Registration for ALL offline attendees	Lobby (Kuntai Royal Hotel)
14:00~16:30	Zoom Pre-test for ALL Online Attendees	Page 13

September 28 | Sunday (GMT+8)	
Banquet Hall (2nd Floor) / 2 楼宴会厅 Chairman: **Prof. Lin Chen** | Conference Co-Chair Chinese Academy of Sciences, China	
09:00-09:10	Opening Remarks **Prof. Qingguang Yu** | Conference Chair Tsinghua University, China
09:10-09:45	**Prof. Wei Xu** Chinese Academy of Sciences, China *Speech Title: Efficiency Improvement Strategies on Linear Induction Machines and Drive Systems for Transportation*
09:45-10:20	**Prof. Chengbin Ma** Shanghai Jiao Tong University, China *Speech Title: Design and Management of Complex Energy Systems*
10:20-10:50	Group Photo & Morning Break
11:00-11:35	**Prof. Mingcong Deng** Tokyo University of Agriculture and Technology, Japan *Speech Title: Learning & Operator based Nonlinear Vibration Control Design for Systems with Smart Material Actuators and Sensors*
11:35-12:10	**Prof. Minxiao Han** North China Electric Power University, China *Speech Title: Development of Dynamic Voltage Support for Power Grid with Large-scale Renewable Energy Generation*
12:10-13:30	Lunchtime < Café (2nd Floor) /咖啡厅(酒店 2F) >

Onsite Sessions	
13:30-15:30	**(Meeting Room 1 ｜ 3rd Floor) / 3 楼 1 号会议室**
	Onsite Session 1: Device Control Models and New Energy Storage Technologies in Modern Power Integration Systems Session Chair: Invited Talks: Assoc. Prof. Xingshuo Li; Assoc. Prof. Jin Li REP622, REP631, REP616, REP627, REP632, REP657, REP6002, REP670
	(Meeting Room 2 ｜ 3rd Floor) / 3 楼 2 号会议室
	Special Session 3: Optimization of Renewable Energy-Based Hydrogen Production Systems and Interactive Operation with the Power Grid Session Chair: Invited Talks: Prof. Hirohito Yamada; Assoc. Prof. Tian Zhao REP6003-A, REP6005, REP687, REP674, REP660, REP647, REP663, REP804
	(3rd Floor) / 3 楼
	Poster Session: Intelligent Electrical Equipment Operation Status Monitoring and Reliability Evaluation Session Chair: REP614, REP626, REP648, REP651, REP806, REP681, REP6006, REP606
15:30-16:00	Coffee Break
16:00-18:00	**(Meeting Room 1 ｜ the 3rd floor) / 3 层 1 号会议室**
	Onsite Session 2: Mechatronics and Control Parameter Optimization Session Chair: Invited Talks: Dr. Chenwei Ma; Dr. Cheng Cheng REP607, REP611, REP669, REP667, REP686, REP688, REP628, REP672
	(Meeting Room 2 ｜ the 3rd floor) / 3 层 2 号会议室
	Special Session 5: Risk Identification and Safety Assessment Technology for Access of Multiple Types of New Energy Scenarios to Distribution Networks Session Chair: Invited Talks: Prof. Yu Wang; Dr. Ningning Ma; Asst. Prof. Rao Fu REP668, REP621, REP691, REP674, REP615, REP690
18:00-20:00	**Dinner Time** < Café (the 2nd floor) /咖啡厅(酒店 2F) >

September 29 | Monday (GMT+8) ***(Note: All presentations on the 29th are online)***	
Online Sessions:	
zoom	Zoom Room A: 819 6539 5767 Link: https://us02web.zoom.us/j/81965395767 Zoom Room B: 817 0799 8582 Link: https://us02web.zoom.us/j/81707998582

9:30-11:30 (ZOOM A)	**Special Session 2:** Challenges and Countermeasures of Large-scale Integration of Power Electronic Devices on Power System Stability Session Chair: REP638, REP641, REP650, REP654, REP655, REP665, REP810, REP656, REP661, REP808, REP803-A, REP809
9:30-11:10 (ZOOM B)	**Online Session 1:** Advanced Control Technology and Reliability Assessment in New Power Systems Session Chair: REP617, REP633, REP634, REP635, REP671, REP653, REP618, REP802, REP659, REP624
Lunch Time & Break	
13:00-14:50 (ZOOM A)	**Online Session 2:** Multimodal Energy Utilization and Optimal Allocation Strategies Session Chair: REP605, REP612, REP640, REP644, REP682, REP801, REP645, REP646, REP684, REP619, REP675
13:30-14:50 (ZOOM B)	**Online Session 3:** Integrated Energy System Operation Management, Energy Allocation and Power Trading Based on Multi-energy Generation Session Chair: REP610, REP636, REP636, REP639, REP642, REP643, REP643, REP683, REP652, REP685, REP805

Note:

The meeting room will open 30 minutes earlier than scheduled. Please enter your room 10-15 minutes early.

NO-SHOW POLICY: Papers unpresented at the conference, without prior written approval by the Conference Technical Program Chair, will be removed from the final conference proceedings before uploading to journals. No refund will be approved to authors of those papers.

Zoom Pre-test for All Online Attendees

※Participants who are going to do an online presentation are required to join the Zoom pre-test on September 27 (GMT+8). Duration: 3 minutes apiece. Free to leave after you finish the rehearsal.

1. We recommend to install the Zoom platform beforehand. New users can login the Zoom meeting without registration.
2. Please set your display name before joining the online meeting. For instance,

◆ Name Setting

Keynote Speaker: Keynote-Name
Author: Paper ID-Name < REP_Name >
Committee: Position-Name
Delegate: Delegate-Name < Delegate_Name >

September 27, 2025	**Zoom Room A: 819 6539 5767** **Link: https://us02web.zoom.us/j/81965395767**
14:00-16:30	
14:00-15:00	REP638, REP641, REP650, REP654, REP655, REP665, REP810, REP656, REP661, REP808 &REP809, REP803-A; REP617, REP633, REP634, REP635, REP671, REP653, REP618, REP802, REP659, REP624
15:00-16:00	REP605, REP612, REP640&REP646, REP644, REP682, REP801, REP645, REP684, REP619, REP675; REP610, REP636, REP636, REP639, REP642, REP643, REP643, REP683, REP652, REP685, REP805
16:00-16:30	※Participants who are unavailable during the above allocated time can join the rehearsal at 16:00-16:30

KEYNOTE SPEAKERS

Prof. Wei Xu
Chinese Academy of Sciences, China
Fellow, IEEE

Speech Title: Efficiency Improvement Strategies on Linear Induction Machines and Drive Systems for Transportation

Abstract: The speech aims to share some most recent advancements in control strategies how to increase the working efficiency on linear induction machines and drive systems, particularly adopted to linear metro, medium-low speed Maglev, which can be extended to ultra/high-speed applications, such as Hyperloop, electromagnetic propulsion systems, etc. Researchers and engineers from electrical, mechanical and information fields may find it useful when dealing with transportation motor and drive related design, optimization and control development, and so on.

Biography: Wei Xu (IEEE Fellow) received the double B.E. and M.E. degrees from Tianjin University, Tianjin, China, in 2002 and 2005, and the Ph.D. from the Institute of Electrical Engineering, Chinese Academy of Sciences (IEECAS), in 2008, respectively, all in electrical engineering. His research topics mainly focus on design and control for linear machines and drives. From 2008 to 2012, he made Postdoctoral Fellow with University of Technology Sydney, Vice Chancellor Research Fellow with Royal Melbourne Institute of Technology, Japan Science Promotion Society Invitation Fellow with Meiji University, respectively. From Oct. 2013 to Dec. 2023, he was one Professor with Huazhong University of Science and Technology, China. Since Jan. 2024, he has been one professor with IEECAS and Director for Key Laboratory of High Density Electromagnetic Power and Systems (Chinese Academy of Sciences). He is IEEE Fellow and IET Fellow. He is the General Chair for 2021 International Symposium on Linear Drives for Industry Applications (LDIA 2021) and 2023 IEEE International Conference on Predictive Control of Electrical Drives and Power Electronics (PRECEDE 2023). He has been Associate/Editor for over ten peer-reviewed IEEE journals, including IEEE Transactions on Industrial Electronics, IEEE Transactions on Power Electronics, and so on. He has authored/edited 12 books, published over 180 IEEE journal papers, been granted over 150 invention patents in the related field of LMs and drives, which has been cited by over 12,000 times with H-index 55 based on Google Scholar until August 2025.

Prof. Chengbin Ma

Shanghai Jiao Tong University, China
Fellow, IEEE

Speech Title: Design and Management of Complex Energy Systems

Abstract: This presentation reviews our activities over the past decade in the design and management of complex energy systems, in particular renewable energy systems and wireless power transfer systems. The configuration and behavior of renewable energy systems are becoming increasingly complex and dynamic. The essence of their management lies in expressing the different dynamics and preferences of individual devices and their interactions; and applying appropriate control to achieve high efficiency, synergy, flexibility and scalability. Our group has developed a general framework that combines multi-agent modeling and game theory-based real-time control, and this framework has been extended to various renewable energy systems, such as hybrid energy storage systems and microgrids. We have also begun to incorporate user behaviors and key uncertainties into our modeling and control strategies for spatiotemporal coordination of large-scale EV charging networks; and are currently investigating new solutions for critical power conversion circuits, such as multi-port magnetic-coupled energy routers, to better implement efficient and complex power flow management.

In addition, the so-called high-frequency wireless power transfer (WPT), operating at, for example, 6.78 MHz and 13.56 MHz, enables an upgrade from the existing inductive WPT technologies, which operate at hundreds of kilohertz (i.e., low-frequency WPT), promising for enabling a high spatial freedom power transfer to a variety of electronic devices. The research of high-frequency is particularly challenging due to obvious parasitics of devices at high frequencies, potential high losses, electromagnetic interference problems, and robustness against varying operation conditions. We have developed an interdisciplinary framework to achieve high-efficiency, low-noise and robust power transfer from a system-level perspective, and pioneered its applications to loading analysis and control, low-noise rectification, more transmitter–receiver configurations, explicit impedance matching network design, and 3D magnetic field shaping, etc. Finally, possible future directions driven by emerging applications are mentioned that may inspire new power architectures, designs and management/control schemes.

Biography: Chengbin Ma (Fellow, IEEE) received the B.S. degree in industrial automation from the East China University of Science and Technology, Shanghai, China, in 1997, and the M.S. and Ph.D. degrees in electrical engineering from The University of Tokyo, Tokyo, Japan, in 2001 and 2004, respectively. From 2004 to 2006, he was an R&D Researcher with the Servo Motor Laboratory, FANUC Limited, Japan. Between 2006 and 2008, he was a Postdoctoral Researcher with the Department of Mechanical and Aeronautical Engineering, University of California, Davis, USA. In 2008, he joined the University of Michigan-Shanghai Jiao Tong University Joint Institute, Shanghai Jiao Tong University, Shanghai, where he is currently a Professor of Electrical and Computer Engineering. His research interests include battery and energy management, wireless power transfer, dynamics and motion control, and wide applications in electronic devices, electric vehicles, microgrids, smart grids, etc. Dr. Ma was the recipient of many teaching and research awards at Shanghai Jiao Tong University, such as Koguan Top Ten Best Teacher Award in 2017 and Koguan Top Ten Research Group Award in 2014. He was also the recipient of Research Excellence Award from AirFuel Alliance, USA, in 2019. He is an Associated Editor for the IEEE Transactions on Industrial Informatics (2016-2022) and IEEE Journal of Emerging and Selected Topics in Industrial Electronics.

Prof. Mingcong Deng

Tokyo University of Agriculture and Technology, Japan
Fellow, IEEE

Speech Title: Learning & Operator based Nonlinear Vibration Control Design for Systems with Smart Material Actuators and Sensors

Abstract: Learning based nonlinear vibration control design is necessary to compensate nonlinear factors in dynamic systems. Recently, smart materials have been used as actuators and sensors in many nonlinear dynamic systems to realize the weight reduction of the systems, such as piezoelectric elements, shape memory alloy etc. In this talk, nonlinear vibration control schemes for systems with piezoelectric actuators & sensors based on operator theory is introduced, nonlinear vibration control for a system using an interactive shape memory alloy actuation is also shown. The merits of the control design are that the nonlinear dynamics from actuators & sensors is considered. Further, some current results are shown to combine learning schemes.

Biography: Mingcong Deng (Fellow, IEEE) received the B.Sc. and M.Sc degrees in industrial automation from Northeastern University, Shenyang, China, and the Ph.D. degree in systems science from Kumamoto University, Kumamoto, Japan. From 1997.04 to 2010.09, he worked with Kumamoto University; University of Exeter, UK; NTT Communication Science Laboratories; Okayama University. From 2010.10, he has been with Tokyo University of Agriculture and Technology, Japan, as a professor and the Chair currently with the Department of Electrical and Electronic Engineering. His research interests include learning & operator based robust nonlinear control and applications. Dr. Deng received the 2014 & 2019 Meritorious Services Awards from IEEE SMC Society, 2020 Most Active Technical Committee Award from IEEE RAS Society and 2024 Most Active SMCS Technical Committee Award from IEEE SMC Society. Dr. Deng is the Chair of Environmental Sensing, Networking, and Decision Making Technical Committee of IEEE SMC Society and the Co-Chair of Agricultural Robotics and Automation Technical Committee of IEEE RAS. He has served on the AE for IEEE TRANSACTIONS ON AUTOMATION SCIENCE AND ENGINEERING (2012-2016) and IEEE/CAA JOURNAL OF AUTOMATICA SINICA (2017-2018). He is a fellow of The Engineering Academy of Japan, and a fellow of IEEE.

Prof. Minxiao Han

North China Electric Power University, China

Speech Title: Development of Dynamic Voltage Support for Power Grid with Large-scale Renewable Energy Generation

Abstract: Transient voltage analysis and control in large-scale renewable energy generation (REG) dominated power systems has become a hot issue. The state of art of transient voltage support technology and its future trend is presented in the speech. Firstly, the essence and challenges of transient voltage problems in the large-scale REG integration are revealed, and the current status and problems of transient voltage control at station-level are discussed. Then the transient voltage response characteristics and typical control technology of REG unit for reactive power regulation are presented. The idea of multi-reactive power sources coordinated control strategy and its application based on decentralized autonomous control are discussed. Specific scenarios with respect to weak grid and HVDC transmission are further extended where the characteristics of transient voltage is addressed and possible control technologies are pointed out. Finally, the key problems that need to be solved are listed, and the future research and development work are prospected.

Biography: Prof. Minxiao Han, Director of Institute of Flexible Electric Power Technology in North China Electric Power University (NCEPU). He was a joint Ph.D student with NCEPU and Queen's University of Belfast, U.K., and a post-doctorial researcher at Kobe University, Japan. He is an IET Fellow and Vice-Chairman of IEEE PES AC/DC system China branch committee. He has been the leader in projects consigned by National Nature Science Foundation of China, National Educational Ministry, and enterprises. He has four published books and more than 100 refereed publications in journals and conferences. His research interests are the applications of power electronics in power system including HVDC, FACTS, power conversion and control.

INVITED SPEAKERS

Hirohito YAMADA

Visiting Professor

International Research Institute of Disaster Science, Tohoku University, Japan

Speech Title: Proposal of a Hierarchical Structure for Standardization of DC Grid Systems

Tian Zhao

Associate Professor

North China University of China, China

Speech Title: Isomorphic Analysis and Dispatch Optimization of Integrated Energy Systems Enabled by Heat Current Method

Xingshuo Li

Associate Professor

Nanjing Normal University, China

Speech Title: Image-Based Soiling Loss Estimation and Real-Time Fault Diagnosis for PV Systems

Jin Li

Associate Professor

Tianjin University, China

Speech Title: Residual Stress in GIL Tri-post Insulators: Modelling, Detection and Suppression

Yu Wang

Professor

Chongqing University, China

Speech Title: Integrated Knowledge-Data Driven Operation and Control for Microgrids

Ningning Ma

Assistant Researcher

Tsinghua University, China

Speech Title: Wideband Oscillation Analysis, Monitoring and Suppression in Converter-Dominated Transmission and Distribution Systems

Rao Fu

Assistant Professor

Shandong Jianzhu University, China

Speech Title: Research on Intelligent Control Strategy for BIPV System Based on TD3-LSTM

Chenwei Ma

Assistant Professor

Southwest Jiaotong University, China

Speech Title: High-robustness Online Fault Diagnosis Technologies for Electric Traction System

Cheng Cheng

Postdoctoral Researcher

Shandong University, China

Speech Title: Absolute Stability of Grid-Connected Inverter Systems: Full-Order Nonlinear Analysis Theory in the Frequency Domain

PARALLEL ONSITE SESSIONS

September 28 (Sunday) 13:30-15:30
(Meeting Room 1 (3rd Floor)/ 3 层 1 号会议室)
Onsite Session 1: Device Control Models and New Energy Storage Technologies in Modern Power Integration Systems
Session Chair:

Time	Paper ID	Speech Title & Presenter
13:30-13:50	Invited Talk	Image-Based Soiling Loss Estimation and Real-Time Fault Diagnosis for PV Systems ***Xingshuo Li, Nanjing Normal University, China***
13:50-14:10	Invited Talk	Residual Stress in GIL Tri-post Insulators: Modelling, Detection and Suppression ***Jin Li, Tianjin University, China***
14:10-14:20	REP622	Grid Support Control of Hybrid DC Transmission System Based on GFM-FBMMC-LCC for Offshore Wind Farms *Ruoning Tian, China Electric Power Planning & Engineering Institute, China*
14:20-14:30	REP631	Analysis of the Impact of Power Electronic Interfaced Loads on System Dynamic Characteristics *Hao Jiang, Hohai University, China*
14:30-14:40	REP616	A High-Efficiency Mesoscale Wind Farm Simulation Tool and Comparative Study *Zhiyuan Qiu, Nanjing University of Science and Technology, China*
14:40-14:50	REP627	Electrical Simulation Experiment and Verification Analysis of Escalators Considering the Impact of Power Quality *Bin Zhao, State Grid Beijing Electric Power Company, China*
14:50-15:00	REP632	Phase Change Material Integration for Passive Thermal Regulation in Liquid MetalBatteries *Xingjie Wu, Huazhong University of Science and Technology, China*
15:00-15:10	REP657	A Low-carbon Evaluation System for the Entire Life Cycle of UHV Projects *Yiting Fu, North China Electric Power University, China*
15:10-15:20	REP6002	Study on Step Response of Electric Field Force during Charging of DC-link Capacitor *Guangzhao Deng, Jiashan Sun. King Power Electronic Capacitor Co., Ltd., China*
15:20-15:30	REP670	An Exploration of a Mechanism for Resident Users to Participate in Demand Response Services Based on Cooperative Game Theory *Wenbo Tang, Hohai University, China*

September 28 (Sunday) 13:30-15:30

(Meeting Room 2 (3rd Floor)/ 3 层 2 号会议室)

Special Session 3: Optimization of Renewable Energy-Based Hydrogen Production Systems and Interactive Operation with the Power Grid

Session Chair:

Time	Paper ID	Speech Title & Presenter
13:30-13:50	Invited Talk	Proposal of a hierarchical structure for standardization of DC grid systems ***Hirohito Yamada, International Research Institute of Disaster Science, Tohoku University, Japan***
13:50-14:10	Invited Talk	Isomorphic analysis and dispatch optimization of integrated energy systems enabled by heat current method ***Tian Zhao, North China University of Technology, China***
14:10-14:20	REP6003-A	Advancing Green Hydrogen Generation: Emerging Strategies in Photoelectrochemical Materials and System Engineering *Meng Nan Chong, Monash University Malaysia*
14:20-14:30	REP6005	Engine Utilization of Post-Consumer Plastic Oil Blended with Oxygenated Additives *Ekarong Sukjit, Suranaree University of Technology, Thailand*
14:30-14:40	REP687	Comparative Energy Analysis of Technical Pathways for Offshore-to-Onshore Hydrogen Transportation *Mengyun Wu, Shandong University, China*
14:40-14:50	REP674	Dynamic Modeling for PV Arrays Based on Power-Law Model *Jingjing Wei, Nanjing Normal University, China*
14:50-15:00	REP660	Exploration and Practice of Emergency Management System for Power Gird Dispatching *Zheng Chen, State Grid Beijing Electric Power Company, China*
15:00-15:10	REP647	A Semi-supervised Deep Learning Framework for Day-ahead Photovoltaic Power Forecasting *Xing Luo, Peng Cheng Laboratory, China*
15:10-15:20	REP663	Thermodynamic Evaluation of a Hybrid Single-Flash Geothermal – Solar Thermal Power Plant for Enhanced Thermal Efficiency and Power Generation *Carl Belmonte, Mapúa University, Philippines*
15:20-15:30	REP804	The Joint Optimization Model for Grid-Connected Wind-PV-Storage Hydrogen Production System *Dong Zhang, State Grid Energy Research Institute Co., Ltd., China*

September 28 (Sunday) 16:00-18:00
(Meeting Room 1 (3rd Floor)/ 3 层 1 号会议室)
Onsite Session 2: Mechatronics and Control Parameter Optimization
Session Chair:

Time	Paper ID	Speech Title & Presenter
16:00-16:20	Invited Talk	High-robustness Online Fault Diagnosis Technologies for Electric Traction System ***Chenwei Ma, Southwest Jiaotong University, China***
16:20-16:40	Invited Talk	Absolute Stability of Grid-Connected Inverter Systems: Full-Order Nonlinear Analysis Theory in the Frequency Domain ***Cheng Cheng, Shandong University, China***
16:40-16:50	REP607	Grid Strength Adaptive Transient Voltage Support with PMSG Wind Turbines *Anqi Shen, North China Electric Power University, China*
16:50-17:00	REP611	Minimal DC Voltage Output Control for Auxiliary MMC in Series-Connected Hybrid Diode Rectifier Integrating Offshore Wind Farm *Zhou Yu, Tsinghua University, China*
17:00-17:10	REP669	DDPG-Based Optimization of Frequency Regulation Control Parameters for Offshore DFIG Wind Turbines *Xin Wu, Hohai University, China*
17:10-17:20	REP667	Electromagnetic Field Modelling and Validation of Cylindrical Permanent Magnets in Traction Motors for Railway Applications *Hao Lin, Beijing Jiaotong University, China*
17:20-17:30	REP686	Decision-Aware CNN–LSTM for Real-Time Wind Turbine Blade Icing and Efficiency Prediction *Wen Lin, Tsinghua University, China*
17:30-17:40	REP688	Electromagnetic Design and Analysis of Permanent Magnet Motors Based on Function-driven Method *Hao Lin, Beijing Jiaotong University, China*
17:40-17:50	REP628	Energy-Based Methods for Tracing Low-Frequency Oscillations in Power Systems: A Review *Xiao Zhang, NR Electric Co., Ltd., China*
17:50-18:00	REP672	Research on Multi-Modal Fusion-Based Anti-Error System for Nuclear Power Plants *Jinxiao Yuan, China Nuclear Power Engineering Co., Ltd, China*

September 28 (Sunday) 16:00-18:00
(Meeting Room 2 (3rd Floor)/ 3 层 2 号会议室)

Special Session 5: Risk Identification and Safety Assessment Technology for Access of Multiple Types of New Energy Scenarios to Distribution Networks

Session Chair:

Time	Paper ID	Speech Title & Presenter
16:00-16:20	Invited Talk	Integrated Knowledge-Data Driven Operation and Control for Microgrids ***Yu Wang, Chongqing University, China***
16:20-16:40	Invited Talk	Wideband Oscillation Analysis, Monitoring and Suppression in Converter-Dominated Transmission and Distribution Systems ***Ningning Ma, Tsinghua University, China***
16:40-17:00	Invited Talk	Research on Intelligent Control Strategy for BIPV System Based on TD3-LSTM ***Rao Fu, Shandong Jianzhu University, China***
17:00-17:10	REP668	Evaluating the Impact of Electrolyzers on Distribution Network *Yunhan Wang, RWTH Aachen, Germany*
17:10-17:20	REP621	The Optimization Selection of the Generator Condenser Modification in High Proportion Renewable Energy System *Tao Wang, Hubei Electrical Power Research Institute, China*
17:20-17:30	REP691	Data-Driven Deep Learning Framework for Fault Identification Method According to Customer Power Supply Reliability in Distribution Network *Weihua Zuo, Tsinghua University, China*
17:30-17:40	REP674	Dynamic Modeling for PV Arrays Based on Power-Law Model *Jingjing Wei, Nanjing Normal University, China*
17:40-17:50	REP615	Enhanced-Reliability ANPC Three-Level Inverter for Large-Scale Photovoltaic Systems *Qiannuo Zheng, Nanjing University of Science and Technology, China*
17:50-18:00	REP690	Research on Artificial Intelligence Autonomous Control Systems for Nuclear Power Plants *Jinxiao Yuan, China Nuclear Power Engineering Co., Ltd, China*

September 28 (Sunday) 13:30-15:30

(3rd Floor/ 3 楼)

Poster Session: Intelligent Electrical Equipment Operation Status Monitoring and Reliability Evaluation

Session Chair:

Frame #	Paper ID	Speech Title & Presenter
01	REP614	Optimal Frequency Governing for Full-Scale Variable-Speed Pumped Storage Units *Sihan Zhang, North China Electric Power University, China*
02	REP626	Two-Level Topology Identification Method Based on Main and Distribution Networks for Regional Anti-Islanding Protection *Shuangfeng Chen, Guodian Nanjing Automation Co., Ltd., China*
03	REP648	SOH Estimation of Lithium Batteries Based on CLSTM-Transformer *Ruisi Zhang, Beijing Institute of Technology, China*
04	REP651	Design and Parameter Optimization of Boundary Elements for Single-ended Whole-line High Speed Protection in Distribution Networks *Pengfei Liu, Xi'an Jiaotong University, China*
05	REP806	An Enhanced Fault Ride-Through Strategy for GFM Converters Using Active Power Curtailment and Reactive Power Anti-Windup Control *Hongwei Ma, Shandong University, China*
06	REP681	Reactive power optimization strategy for medium- and low-voltage distribution networks based on the ADMM algorithm *Binwu Zhang, State Grid Wuwei Power Supply Company, China*
07	REP6006	Exploring the flexibility of hydrogen metallurgy for integration of renewable energy *Yongsheng Fu, Wuxi Research Institute of Applied Technologies, Tsinghua University, China*
08	REP606	A Quantitative Assessment Method for Transformer Overheating Fault Severity Based on Weighted Carbon-Hydrogen Ratio of Characteristic Gases *Pintao Wei, Chongqing University, China*

PARALLEL ONLINE SESSIONS

September 29 (Monday) 09:30-11:30
(ZOOM A: 819 6539 5767; https://us02web.zoom.us/j/81965395767)
Special Session 2: Challenges and Countermeasures of Large-scale Integration of Power Electronic Devices on Power System Stability
Session Chair:

Time	Paper ID	Speech Title & Presenter
09:30-09:40	REP638	Health state identification method of high voltage power grid circuit breaker based on adaptive adversarial transfer network *Shimin Liang, Shenyang University of Technology, China*
09:40-09:50	REP641	Electromagnetic transient parameter prediction of AC/DC system based on convolutional neural network and Phillips-Haffron model *Yifu Zhang, State Grid JiLin Electric Power Research Institute, China*
09:50-10:00	REP650	Identification of Transformer DC Bias Voiceprint Based on Mel-scale and Gammatone Filter Bank Energies and Recursive Feature Elimination *Chenguang Wang, State Grid Liaoning Electric Power Supply Co., LTD., Dalian Electric Supply Company, China*
10:00-10:10	REP654	A Practical Equivalent Method for Wind Farms Considering LVRT Active Power Recovery Characteristics *Jialong Wu, State Grid Electric Power Research Institute (NARI Group Corporation), China*
10:10-10:20	REP655	Research on Closed-Loop Testing Methods for GridForming Energy Storage Converters *Yushu Hong, NR Electric Co., Ltd., China*
10:20-10:30	REP665	Modeling and Analysis of Grid-Forming Converter Integration for Enhancing Grid Strength *Xiaofei Sun, Shandong University, China*
10:30-10:40	REP810	A Multi-level Safety Risk Prevention and Control for Power System Laboratories *Xue Li, Tsinghua University, China*
10:40-10:50	REP656	Research on Black Start and Multi Micro Source Coordinated Control Strategy under Island Operating Conditions Based on Grid-forming Control *Jianing Li, State Power Investment Group Science and Technology Research Institute Co., China*
10:50-11:00	REP661	Design of Power Control Strategy for Three-Level Neutral Point Clamped Converter Considering Day and Night Operation Modes *Andrey Chepiga, Parus-Electro, Moscow, Russia*

11:00-11:10	REP808	High-frequency oscillation stability analysis of flexible DC transmission system based on frequency impedance model *Run Huang, Yunnan Power Grid Co., Ltd, China*
11:10-11:20	REP803-A	Spatial-temporal Analysis of Power Grid Frequency Dynamics in High-Renewable Penetration Scenarios Using Physics-Informed Neural Networks *Di Liu, Science42 Technology, China & Tsinghua University, China*
11:20-11:30	REP809	Wideband Oscillation Parameter Identification in Converter-Dominated Power Systems *Min Cheng, Yunnan Power Grid Co., Ltd, China*

September 29 (Monday) 09:30-11:10

(ZOOM B: 817 0799 8582; https://us02web.zoom.us/j/81707998582)

Online Session 1: Advanced Control Technology and Reliability Assessment in New Power Systems

Session Chair:

Time	Paper ID	Speech Title & Presenter
09:30-09:40	REP617	A graph-based forward-chaining expert system for direct drive wind turbine monitoring *Cesar Tadeu Nasser Medeiros Branco, Universidade Federal de Santa Catarina, Brazil*
09:40-09:50	REP633	Grid-connected transient voltage control method for synchronous operation of renewable energy station *Hongda Liu, Shenyang University of Technology, China*
09:50-10:00	REP634	Voltage Active Support Strategy of New Energy Station Considering Multi-Type Unit Coordination *Xuanwen Zhang, Shenyang University of Technology, China*
10:00-10:10	REP635	Active stable grid-connected control method of multi-unit parallel in new energy station *Runze Liu, Shenyang University of Technology, China*
10:10-10:20	REP671	Study on System Costs with High Shares of New Energy and Power Grid Investment Recovery *Yuluo Bu, State Grid Energy Research Institute, Beijing, China*
10:20-10:30	REP653	Fault Ride-Through Strategy based on Coordinated Control of Wind Turbines and MMC-HVDC *Zixuan Zhang, Tsinghua University, China*
10:30-10:40	REP618	Hybrid Multi-terminal DC Transmission System for Large Offshore Wind Farms *Huanhuan Jin, Tsinghua University, China*
10:40-10:50	REP802	Millimeter Wave Non-destructive Testing of XLPE Insulation Structures for Electrical Equipment *Ya Guo, State Grid Henan Information & Telecommunication Company (Data Center), China*
10:50-11:00	REP659	A Digital Twin Technology as a Fault Identification and Diagnostic tool for PV Mini grids: A Systematic Review *Gilede Kassahun Berisha, College of Technology and Built Environment, Addis Ababa University, Ethiopia*
11:00-11:10	REP624	Model-Based Fault Detection in a Water Driven Parabolic Trough Collector *Pedro J. Zufiria, Universidad Politécnica de Madrid, Spain*

September 29 (Monday) 13:00-14:50

(ZOOM A: 819 6539 5767; https://us02web.zoom.us/j/81965395767)

Online Session 2: Multimodal Energy Utilization and Optimal Allocation Strategies

Session Chair:

Time	Paper ID	Speech Title & Presenter
13:00-13:10	REP605	Research on U.S. Renewable Energy Consumption Prediction Based on Multi-branch Deep Learning Architecture *Yunchong Liu, University of Pennsylvania, USA*
13:10-13:20	REP612	Adaptive Battery Control in PV Systems Using Deep Learning and Swarm Intelligence Algorithms *Md Maidul Islam, Asian Institute of Technology (AIT), Thailand*
13:20-13:30	REP640	Collaborative optimization based on wind-solar-storage system scheduling method *Haihan Li, Shenyang University of Technology Shenyang, China*
13:30-13:40	REP644	Multi-energy storage optimal configuration method for new energy power system *Hengxing Lu, ShenYang University of Technology, China*
13:40-13:50	REP682	Coordinated Primary Frequency Regulation Control Strategy for Offshore Wind Power-Hydrogen Energy Systems *Lulu Zhao, CHN ENERGY New Energy Technology Research Institute Co., Ltd, China*
13:50-14:00	REP801	Research on Development and Application Trends of Renewable Energy Hydrogen Production Technology *Yuchen Cao, State Grid Energy Research Institute, China*
14:00-14:10	REP645	Coordinated operation method of optical storage based on improved deep neural network *Yuwen Liu, ShenYang University of Technology, China*
14:10-14:20	REP646	Reserve capacity optimization method of micro-energy system based on deep reinforcement learning *Haihan Li, Shenyang University of Technology, China*
14:20-14:30	REP684	Sustainable Water Access in Iraq's Arid Areas Through PV Pumping Systems: PVSyst Simulation and Analysis *Omar Sharaf Al-Deen Al-Yozbaky, University of Mosul, Nineveh, Iraq*
14:30-14:40	REP619	Enhancing Thermal Efficiency of a Single-Slope Solar Still with Submerged Ferrite Magnets: Experimental Investigation *Naouar Elmghari, Laboratoire des Matériaux avancés et de Génie des Procédés, Ecole nationale supérieure de chimie, Ibn Tofail University, Kenitra, Morocco*

14:40-14:50	REP675	Simulation of the Impact of Green Power on Energy Transition: A Case Study of Carbon Peaking Pilot Cities *Dafei Jiang, State Grid Jibei Electric Power Co., Ltd. Tangshan Power Supply Company, China*

September 29 (Monday) 13:00-14:50

(ZOOM B: 817 0799 8582; https://us02web.zoom.us/j/81707998582)

Online Session 3: Integrated Energy System Operation Management, Energy Allocation and Power Trading Based on Multi-energy Generation

Session Chair:

Time	Paper ID	Speech Title & Presenter
13:00-13:10	REP610	Physics-Informed Hybrid KNN-MLP for Enhanced Wind Power Forecasting *Yingjun Shen, The Chinese University of Hong Kong, Shenzhen, China*
13:10-13:20	REP636	Electricity consumption behavior prediction method based on feature fusion and ensemble learning *Xiancheng Zhong, Shenyang University of Technology, China*
13:20-13:30	REP637	Research on load forecasting optimization method based on interpretable spatio-temporal graph network *Cheng Qian, Shenyang University of Technology, China*
13:30-13:40	REP639	Electric-thermal collaborative optimization scheduling strategy based on artificial intelligence algorithm *Dawei Zhao, Shenyang University of Technology, China*
13:40-13:50	REP642	Collaborative optimization of wind-solar-storage integrated system based on NSGA-III and bi-level optimization model *Peng Zheng, Shenyang University of Technology, China*
13:50-14:00	REP643	Wind farm station output prediction method based on improved ensemble learning *Baobao Jin, Shenyang University of Technology, China*
14:00-14:10	REP658	Integrated planning of data centers and coupled electricity-water systems with renewable energy for low-carbon goals *Yuan Wang, North China Electric Power University, Beijing, China*
14:10-14:20	REP683	Review of Intelligent Optimized Dispatch Management Applications in Watersheds *Li Lin, Guodian Nanjing Automation CO., LTD. Nanjing, China*
14:20-14:30	REP652-5	Personalized Energy conservation Incentive Strategy for Residential Consumers: Combining Reinforcement Learning-based Clustering with Dynamic Time Warping and Convolutional Neural Network *Xin He, Tsinghua University, China*
14:30-14:40	REP685	Load Forecasting in Islanded Microgrids Using VMD-CNN-BiGRU *Jianpeng Guo, State Grid Fujian Integrated Energy Service Co., Ltd., China*
14:40-14:50	REP805	Research on the Quantitative Method of the Environmental Value of Green Electric Power

	Zhiyong Shi, State Grid Energy Research Institute, China

Delegate List

Alex Zhang	Nature Energy
Mohamed Elsayed Shiybahelhamd Abdelwareth	KMITL University, Thailand
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