Conference Program
会议日程

March 25-28, 2022 | Chengdu, China

2022 年 3 月 25-28 日 | 中国 • 成都

2022 THE 4TH ASIA ENERGY AND ELECTRICAL ENGINEERING SYMPOSIUM

第四届亚洲能源与电气工程研讨会

Conference Venue

会议地点

Dorsett Chengdu

成都帝盛酒店

Add: NO.168, Xi Yu long Street, Qing yang District, Chengdu Sichuan Province, P.R. China

四川省成都市青羊区西玉龙街 168 号

CONTENT

Welcome Address

Dear distinguished delegates,

It is our great pleasure to welcome you to 2022 The 4th Asia Energy and Electrical Engineering Symposium (AEEES 2022) during March 25-28, 2022 in Chengdu, China.

The COVID19 pandemic has an immense global impact. Our deepest sorry and concern go out to the people who have suffered during this pandemic. To protect people's health and wellbeing and consider the travel restriction of some participants, we will have to make this conference with both online and onsite..

AEEES 2022 will be a great chance for sharing the latest insights of academic and industrial research, bringing together interested academics and industry experts. We hope that you will have a productive and fun-filled time at this very special conference. We have a great line-up of keynote & invited speakers including:

- Prof. Marco Liserre, Kiel University, Germany (Fellow IEEE)
- Prof. Chris Mi, San Diego State University, USA (Fellow IEEE & SAE)
- Prof. Claudio Cañizares, University of Waterloo, Canada(Fellow IEEE)
- Prof. Fushuan Wen, Zhejiang University, China(Fellow IEEE)
- Prof. Farhad Shania, Murdoch University, Australia
- Assist. Prof. Xiaokang Liu, Politecnico di Milano, Italy
- Assoc. Prof. Sayed Abulanwar, Mansoura University, Egypt

To put a successful conference together could have only been achieved through a team effort. To that end, we would like to thank all the committee members for their meticulous work in support of many conference activities; all of the sponsoring for providing their considerable supports. Lastly, we would like to thank all of the conference participants for their contributions which are the foundation of this conference.

Stay safe and be healthy! We look forward to meeting you next year!

Yours sincerely,
AEEES 2022
Conference Organizing Commettees

Conference Committees

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Tianwen Zheng, Sichuan Energy Internet Research Institute, Tsinghua University, China

Yanhua Zheng, Guangzhou University, China

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Hui Hou, Wuhan University of Technology, China

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Daning Zhang, Xi'an Jiaotong University, China

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Conference Agenda

DAY 1- FRIDAY, MAR. 25

ONSITE:

Onsite Registration	
VENUE: HOTEL LOBBY	
10:00-16:00	Collecting conference materials for onsite participants

ONLINE:

Online participants Testing		
10:30-18:00	Online Participants + Online keynote speakers	
	Room A 891 2336 5574	Room B 816 5927 2794
10:30-11:30	KN Test ● Prof. Chris Mi ● Prof. Yutian Liu ● Prof. Fushuan Wen ● Prof. Claudio Cañizares	Session 1-4 Test
11:30-14:00	Break	
14:00-15:00	Session 5-8	Session 9-12
15:00-15:30	Break	
15:30-16:30	KN Test ● Prof. Marco Liserre. ● Prof. Farhad Shania ● Assist. Prof. Xiaokang Liu, ● Assoc. Prof. Sayed Abulanwar,	Session 13-16
16:30-17:00	Break	
17:00-18:00	Session 17-20	Best Student Paper Competition I-IV+ SC+ Posters
Note:	1.Please join the test session on time 2.First find your session and join the test room without sign in 3.Please send the message to conference secretary if you really have something emergency, we will arrange your test at other time 4. Onsite Participant is no need to join the test session	

DAY 2- SATURDAY, MAR. 26

Conference Opening and Onsite Keynote speeches	
VENUE: 9TH MEETING ROOM（会议九厅） ONLINE ZOOM ID: 891 2336 5574	
	Chair:
9:00-9:10	Welcome Address
9:10-9:55	**KEYNOTE SPEAKER I** Prof. Chris Mi, San Diego State University, USA (Fellow IEEE & SAE) *Title: Cost-Effective Integration of Second-Life EV Batteries with Solar PV Systems for Commercial Buildings*
9:55-10:30	Group Photo & Break
10:30-11:15	**KEYNOTE SPEAKER II** Prof. Claudio Cañizares, University of Waterloo, Canada (IEEE Fellow) *Title: Energy Storage Systems*
11:15-12:00	**KEYNOTE SPEAKER III** Prof. Fushuan Wen, Zhejiang University, China (IEEE Fellow) *Title: Demand Responses and Management in Power and Integrated Energy Systems*
12:00-14:00	Lunch Break
	Chair:
14:00-14:45	**KEYNOTE SPEAKER IV** Prof. Marco Liserre, Kiel University, Germany (IEEE Fellow) *Title: The Smart Transformer providing service to the electric network and addressing the reliability challenges through power routing*
14:45-15:10	**INVITE SPEAKER I** Prof. Farhad Shania, Murdoch University, Australia *Title: Recent and Future Research on Microgrid Clusters*
15:10-15:25	Group Photo & Break
15:25-15:50	**INVITE SPEAKER II** Assist. Prof. Xiaokang Liu, Politecnico di Milano, Italy *Title: Advanced open-loop phasor detection technologies for enabling high-performance grid-tied VSC control*
15:50-16:15	**INVITE SPEAKER III** Assoc. Prof. Sayed Abulanwar, Mansoura University, Egypt *Title: Hybrid AC/DC Microgrids operation and control*
16:15-17:00	Break
17:00-18:00	Poster Session (Combined online and onsite) Online Zoom ID: 891 2336 5574

DAY 3- SATURDAY, MAR. 27

Parallel Sessions				
	9th Meeting Room (会议九厅) Zoom ID：891 2336 5574		Room B(Online) Zoom ID：816 5927 2794	
09:30-10:30	Best Student Paper Competition I Smart Grid and Management		Best Student Paper Competition III Renewable Energy	
10: 30-10:45	Break			
10:45-12:00	Best Student Paper Competition II Power Systems and Control		Best Student Paper Competition IV Microgrid and Market Management	
12:00-13:30	Lunch Break			
	9th Meeting Room (会议九厅) Zoom ID：891 2336 5574	10th Meeting Room (会议十厅) Zoom ID：816 5927 2794	Room C (Online) Zoom ID: 841 0048 1462	Room D (Online) Zoom ID: 879 1976 6974
13:30-15:30	Onsite Session 1 Optimization and Market of Integrated Electricity and Natural Gas Systems	Onsite Session 2 Condition Monitoring and Intelligent Diagnosis	Online Session 5 Modern Energy Science and Technology	Online Session 6 Thermal Energy and Power Engineering
15:30-15:45	Break			
15:45-17:45	Onsite Session 3 Power Engineering and System Monitoring	Onsite Session 4 Renewable Energy and Power Engineering	Online Session 7 Electronic Materials and Battery Development	Online Session 8 Voltage Control and Power Transmission

DAY 4- SATURDAY, MAR. 28

Online Parallel Sessions			
	Room A(Online) 891 2336 5574	Room B(Online) 816 5927 2794	Room C(Online) 841 0048 1462
09:00-10:30	Online Session 9 Artificial Intelligence Application in Energy Systems	Online Session 10 Intelligent Control and Management of Modern Power and Energy Systems	Online Session 11 Internet of Things Applications in Power Distribution Systems
10: 30-10:45	Break		

10:45-12:30	Online Session 12 Demand Response and Direct Load Control for Renewable Energy Integration into Power Grid	Online Session 13 The Electricity Market and the Utilization of Clean Energy	Online Session 14 Mechatronics
12:30-13:30	Lunch Break		
13:30-15:30	Online Session 15 High Voltage and Insulation Technology	Online Session 16 Distribution Network and Distribution System Optimization	Online Session 17 Electrical Equipment Control and System Model
15:30-15:45	Break		
15:45-17:45	Online Session 18 Power Equipment Detection and Reliability	Online Session 19 Power Grid Control and Condition Monitoring	Online Session 20 Power Supply System and Energy Storage Technology
18:00-18:30	Closing Ceremony Online ID: 879 1976 6974		

Local Information

Conference Venue

DORSETT | DORSETT CHENGDU 成都帝盛酒店

Dorsett Chengdu | 成都帝盛酒店
NO.168, Xi Yu long Street, Qing yang District, Chengdu Sichuan Province, P.R. China
四川省成都市青羊区西玉龙街 168 号
https://www.dorsetthotels.com/zh-hk/dorsett-chengdu/index.html

How to get there?

From the Shuangliu International Airport
从双流国际机场出发

- **Taxi: about 35 minutes directly to the venue**
  出租车：大约 35 分钟左右

- **Public Transportation: Chengdu Metro Line 10** to **Taipingyuan Station** and transfer to **Chengdu Metro Line 3** to **Sichuan Gymnasium Station** and transfer to **Chengdu Metro Line 1** to **Luomashi Station（Exit F）**
  地铁线：地铁 10 号线（太平园站转）⟹ 地铁 3 号线（省体育馆转）⟹ 地铁 1 号线（骡马市 F 口）

From the Tianfu International Airport
从天府国际机场出发

- **Taxi: about 1 hour directly to the venue**
  出租车：大约 1 小时左右

- **Public Transportation: Chengdu Metro Line 18** to **Chengdu South Railway Station** and transfer to **Chengdu Metro Line 1** to **Luomashi Station（Exit F）**
  地铁线：地铁 18 号线（火车南站转）⟹ 地铁 1 号线（骡马市 F 口）

From Chengdu East train station:
从成都东站出发

- **Taxi: about 22 minutes directly to the venue**
  出租车：大约 22 分钟左右
- **Public Transportation: Metro Line 2 to Tianfu Square Station and** transfer to **Chengdu Metro Line 1** to **Luomashi Station（Exit F）**

地铁线：成都地铁 2 号线 (天府广场转) ⟹ 地铁 1 号线（骡马市 F 口）

Time

UTC/GMT+8

Weather

The Weather Situation of Chengdu in March

Average daily minimum temperature	Average daily highest temperature
12℃	19℃

Emergency

Hospital Emergency phone: 999

Fire Service: 119

Emergency Call: 110

Notice

- **Please take care of your valuable articles and don't place them in the conference rooms or other public place to prevent from being lost.**
  请随身携带贵重物品，不要随意放置在会议室内， 以防丢失
- **Please don't throw your name card away when you don't need it, just return it to the registration table.**
  请不要随意丢掉代表证，如您不需要， 请归还至注册台
- **Please ensure that you are from the low risk area and show the green code when you join the meeting. And Wear the Mask when you at the public Place**
- **请确保您来自低风险地区，参会出示健康绿码，在公共场合全程佩戴口罩**

Onsite Presentation Guideline

Oral Presentations

- **Timing:** a maximum of 15 minutes total, including speaking time and discussion. Please make sure your presentation is well timed. Please keep in mind that the program is full and that the speaker after you would like their allocated time available to them.
- You can use CD or USB flash drive (memory stick), make sure you scanned viruses in your own computer. Each speaker is required to meet her / his session chair in the corresponding session rooms 10 minutes before the session starts and copy the slide file (PPT or PDF) to the computer.
- It is suggested that you email a copy of your presentation to your personal in box as a backup. If for some reason the files can't be accessed from your flash drive, you will be able to download them to the computer from your email.
- Please note that each session room will be equipped with a LCD projector, screen, point device, microphone, and a laptop with general presentation software such as Microsoft Power Point and Adobe Reader. Please make sure that your files are compatible and readable with our operation system by using commonly used fronts and symbols. If you plan to use your own computer, please try the connection and make sure it works before your presentation.
- Movies: If your Power Point files contain movies please make sure that they are well formatted and connected to the main files.

Poster Presentations

- Maximum poster size is 60cm wide by 80cm high
- Posters are required to be condensed and attractive. The characters should be large enough so that they are visible from 1 meter apart.
- Please note that during your poster session, the author should stay by your poster paper to explain and discuss your paper with visiting delegates.

Dress code

Please wearing formal clothes or national characteristics of clothing

Onsite Presentation Guideline

Before the conference

Time Zone
Beijing Time (GMT+8)
You're suggested to set up the time on your computer in advance.

Platform: ZOOM
* You can download Zoom Platform from the link below:
https://zoom.us/download

* Zoom Guideline:
https://support.zoom.us/hc/en-us/articles/206618765-Zoom-Video-Tutorials/

Equipment Needed
- A computer with internet connection and camera
- Headphones

Environment Needed
- A quiet place
- Stable internet connection
- Proper lighting and background

Test Your Presentation

Date: Friday, 25 March, 2022
Prior to the formal meeting, presenters shall join the test room to ensure everything is on the right track. Please check your test time on this program.
Every presenter or listener enter the ZOOM, please rename as:
Session Number + Paper ID + Your Name
*For example:
Presenters: S1+E001+Jack
Listeners: Listener+Jack

Zoom ID

Room A: 891 2336 5574 (https://zoom.us/j/89123365574)
Room B: 816 5927 2794 (https://zoom.us/j/81659272794)
Room C: 841 0048 1462 (https://zoom.us/j/84100481462)
Room D: 879 1976 6974 (https://zoom.us/j/87919766974)

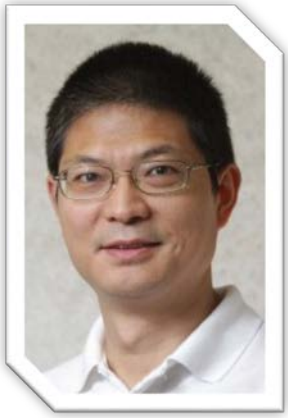
During the conference

Voice Control Rules
- The host will mute all participants while entering the meeting.
- Speakers can unmute microphone when it is turn for his or her presentation.

Oral Presentation
- Timing: a maximum of 15 minutes in total, including 2-3 minutes for Q&A. Please make sure your presentation is well timed.
- Please join the meeting room 10 minutes in advance.
- The conference encourages all presenters to make live oral presentations. For technical problems such as network instability, we suggest you email a record video/slide with sound to conference secretary as backup before or on **March 25. 2022.**

Conference Recording
- The whole conference will be recorded. We appreciate you proper behavior and appearance.
- The recording will be used for conference program and paper publication requirements. The video recording will be destroyed after the conference and it cannot be distributed to or shared with anyone else, and it shall not be used for commercial nor illegal purpose.

Keynote Speaker I



Onsite Venue: 9th Meeting Room
会议九厅
Zoom ID: 891 2336 5574
09:10-09:55, Mar. 26 (GMT+8)

Prof. Chris Mi
IEEE & SAE Fellow
San Diego State University, USA

Title: Cost-Effective Integration of Second-Life EV Batteries with Solar PV Systems for Commercial Buildings

Abstract: As a low cost and mature clean energy source, solar PV generation currently has a high penetration rate especially in sunshine-rich states like California. Battery energy storage systems (BESSs) are frequently incorporated with PV systems as a standard approach to buffer the volatile nature of the PV output. Household small PV and storage systems are popular products in the market. For commercial buildings, similar technology is also available, but normally featuring large centralized battery stacks and consequently high cost.
Electric vehicles (EVs) started to enjoy a booming market share since the last decade. The number of EVs on roads is enormous and keeps growing rapidly, and so is the quantity of EV batteries. It is estimated that the first huge wave of EV battery retirement in California will hit in 2025, and retired batteries will keep coming thereafter. EV batteries today, almost exclusively lithium-ion based, cost heavily in both production and recycling. Economically dealing with retired EV batteries is an important topic.

Retired EV batteries, though no longer roadworthy, still have considerable capacity for stationary applications where the requirement for energy and power density is not as stringent. As an abundant byproduct from the road, these second-life EV batteries cost much less than new products. Meanwhile, the high cost of (new) batteries in storage systems could be a major discouragement for potential clients, especially small/medium owners. Thus, developing proper technologies to bridge the supply and demand has great significance.
The aim of this research is to validate that using second-life EV batteries in BESS for PV and storage system for small/medium sized commercial buildings will reduce the overall cost over serviceable life compared to using new batteries. To achieve this, we are conducting thorough multi-scale analysis and modeling of the second-life EV battery aging process and building degradation models, accordingly developing optimized energy management strategy considering PV and load profiles, and building customized electrical and control systems for site pilot testing.

Downscaled lab test bench for electrical and control system and battery cycling lab test system are established in San Diego State University (SDSU), and tests are being conducted. Two pilot testing sites, both with existing solar PV systems but different penetration rate, have been selected and the respective BESSs designing processes are ongoing. Through pilot testing, we aim to achieve overall cost reduction and no less than 35% reduction in initial installation cost, and also to establish the supply chain for similar projects in the future.

Bio: Dr. Mi is the distinguished Professor and Chair of the Department of Electrical and Computer Engineering at San Diego State University. He is a Fellow of IEEE (Institute of Electrical and Electronics Engineers) and SAE

(Society of Automotive Engineers). He is also the Director of the US Department of Energy-funded Graduate Automotive Technology Education (GATE) Center for Electric Drive Transportation at SDSU. He was previously a faculty member at the University of Michigan-Dearborn from 2001 to 2015, and an Electrical Engineer with General Electric from 2000 to 2001. He also served as the CTO of 1Power Solutions from 2008 to 2011. Dr. Mi received his Ph. D from the University of Toronto, Canada, in 2001.

Dr. Mi has won numerous awards, including the “Distinguished Teaching Award” and “Distinguished Research Award” from the University of Michigan-Dearborn, IEEE Region 4 “Outstanding Engineer Award,” IEEE Southeastern Michigan Section “Outstanding Professional Award,” and SAE “Environmental Excellence in Transportation (E2T) Award.” He is the recipient of three Best Paper Awards from IEEE Transactions on Power Electronics and the 2017 ECCE Student Demonstration Award. In 2019, he received the Inaugural IEEE Power Electronics Emerging Technology Award. In 2022, he received the Albert W. Johnson Research Lectureship and named the Distinguished Professor, the highest honor for any faculty at San Diego State University and only one award is given each year.

Dr. Mi has received over $12 million in research funding for his research. He has published 5 books, 204 journal papers, 126 conference papers, and 25 issued and pending patents. He served as Editor-in-Chief, Area Editor, Guest Editor, and Associate Editor of multiple IEEE Transactions and international journals, as well as the General Chair of over ten IEEE international conferences

Keynote Speaker II

Onsite Venue: 9th Meeting Room
会议九厅
Zoom ID: 891 2336 5574
10:30-11:15, Mar. 26 (GMT+8)

Prof. Claudio Cañizares
IEEE Fellow
University of Waterloo, Canada

Title: Energy Storage Systems

Abstract: As the penetration of variable renewable generation increases in power systems, issues such as grid stiffness, larger frequency deviations, and grid stability are becoming more relevant. In this context, Energy Storage Systems (ESSs) are proving to be effective in facilitating the integration of renewable resources, and thus are being widely deployed in both microgrids and large power grids. This talk will review several energy storage technologies, particularly Compress Air Energy Storage (CAES), flywheels, batteries, and thermal energy systems, and their modeling and applications for power systems. An overview will be provided of the work being carried out by Prof. Canizares' group at the University of Waterloo on all these energy storage systems, focusing on novel models and applications in microgrids and distribution and transmission grids for system stability and control, in particular for frequency regulation.

Bio: Dr. Claudio Cañizares is a University Professor and the Hydro One Endowed Chair at the Electrical and Computer Engineering (E&CE) Department, and the Executive Director of the Waterloo Institute for Sustainable Energy (WISE) at the University of Waterloo, where he has held various academic and administrative positions since 1993 and received the 2021-2022 Awards of Excellence in Graduate Supervision at both the University and Faculty of Engineering levels. He obtained the Electrical Engineer degree from the Escuela Politécnica Nacional (EPN) in Quito-Ecuador in 1984, where he held different academic and administrative positions between 1983 and 1993, and his MSc (1988) and PhD (1991) degrees in Electrical Engineering are from the University of Wisconsin-Madison. His research activities focus on the study of stability, control, optimization, modeling, simulation, and computational issues in bulk power systems, microgrids, and energy systems in the context of competitive energy markets and smart grids. In these areas, he has led or been an integral part of many grants and contracts from government agencies and private companies worth millions of dollars, and has collaborated with multiple industry and university researchers in Canada and abroad, supervising/co-supervising over 170 research fellows and graduate students. He has authored/co-authored more than 350 publications with over 24,000 citations and a 70+ H-index, including journal and conference papers, technical reports, book chapters, disclosures and patents, and has been invited to deliver keynote speeches, seminars, tutorials, and presentations

at many institutions and conferences worldwide. He is the Editor-In-Chief of the Institute of Electrical & Electronic Engineering (IEEE) Transactions on Smart Grid, the 2022-2023 IEEE Division VII Director of the IEEE and Power & Energy Society (PES) Boards, and a Fellow of the IEEE, a Fellow of the Royal Society of Canada, where he was the Director of the Applied Science and Engineering Division of the Academy of Science from 2017 to 2020, and a Fellow of the Canadian Academy of Engineering. He is also the recipient of the 2017 IEEE PES Outstanding Power Engineering Educator Award, the 2016 IEEE Canada Electric Power Medal, and of multiple IEEE PES Technical Council and Committee awards and recognitions, holding leadership positions in several IEEE-PES Committees, Working Groups, and Task Forces.

Keynote Speaker III

Onsite Venue: 9th Meeting Room
会议九厅
Zoom ID: 891 2336 5574
11:15-12:00, Mar. 26 (GMT+8)

Prof. Fushuan Wen
IEEE Fellow
Zhejiang University, China

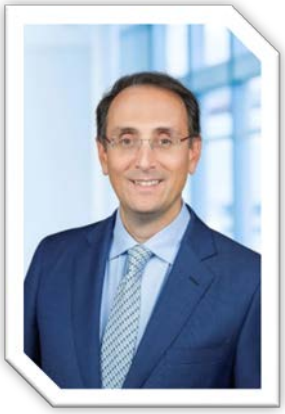
Title: Demand Responses and Management in Power and Integrated Energy Systems

Abstract: The following issues will be addressed in this speech:

1. Brief introduction to demand responses and integrated demand responses
2. Optimal planning of energy hubs with demand side management in an integrated electricity-gas energy system
3. Economic operation of industrial microgrids with multiple kinds of flexible loads
4. Optimal operation of commercial buildings with generalized demand side management
5. A demand side response strategy for large industrial customers considering the uncertainty of renewable energy generation
6. Research problems to be addressed

Bio: F Fushuan Wen has been a full professor in Zhejiang University, China since 1997. He is listed in "Most Cited Chinese Researchers" in six consecutive years from 2015 to 2020 by Elsevier. He is the Editor-in-Chief of Energy Conversion and Economics, the deputy Editor-in-Chief of Automation of Electric Power Systems, and serves as the editor, subject editor and associate editor of several international journals. He has been undertaking various teaching, research and visiting appointments in National University of Singapore, Hong Kong Polytechnic University, University of Hong Kong, South China University of Technology, University of New South Wales in Australia, Queensland University of Technology in Australia, Brunei University of Technology, Technical University of Denmark, Nanyang Technological University in Singapore, Murdoch University in Australia, Tallinn University of Technology, Hangzhou Dianzi University, Commonwealth Scientific and Industrial Research Organization (CSIRO) in Australia, Shenzhen Institute of Artificial Intelligence and Robotics for Society. His research interests include power industry restructuring, power system alarm processing, fault diagnosis and restoration strategies, smart grids and electric vehicles, as well as artificial intelligence applications in power and integrated energy systems. He is a Fellow of IEEE.

Keynote Speaker IV



Onsite Venue: 9th Meeting Room
会议九厅
Zoom ID: 891 2336 5574
14:00-14:45, Mar. 26 (GMT+8)

Prof. Marco Liserre
IEEE Fellow
Kiel University, Germany

Title: The Smart Transformer providing service to the electric network and addressing the reliability challenges through power routing

Abstract: The increasing penetration of renewable energy systems and charging stations is challenging the distribution grids. The Smart Transformer is a power electronics-based transformer with control and communication functionalities, which can avoid or defer the costly network reinforcement required in both the LV and MV grids. The Smart Transformer allows hybrid and meshed network operation also with variable voltage profile, being able to integrate more effectively storage and offer service to the MV and HV grids (like frequency support). Laboratory experiments through Hardware in the Loop (HIL) and Power HIL with a special grid emulator and a downscaled ST prototype developed at the Chair of Power Electronics of Kiel University will provide insights in the ST operation. The Smart Transformer must be realized with a modular structure to provide scalability and higher availability through fault tolerance and reconfigurability to the secondary substations. The design and control of a complex modular structure could result in efficiency and reliability challenges because of the higher number of components respect to a non-modular one. Power routing allows to exploit the modularity to transform this possible weakness in a point of strength. The basic principle of power routing is loading more those subsystems with longer remaining useful lifetime and loading less those which are nearer to their wear-out, also for better scheduling and even delaying maintenance. Several innovative modulation and control techniques allow the implementation of power routing and graph theory allows a holistic modelling of the Smart Transformer to take efficiency and reliability into consideration in the control. These features are proven showing results of many prototypes also built using SiC devices. The keynote summarizes the main achievement of several excellence and strategic projects, like the EU ERC Consolidator Grant "HEART" or the German governmental Copernicus Initiative "ENSURE", which did result in 125 publications (50 journal ones), 8 IEEE Awards, several industrial cooperation like the LV-Engine project led by Scottish Power, which will test the Smart Transformer in the electrical grid.

Bio: Marco Liserre (S'00-M'02-SM'07-F´13) received the MSc and PhD degree in Electrical Engineering from the Bari Technical University, respectively in 1998 and 2002. He has been Associate Professor at Bari Technical University and from 2012 Professor in reliable power electronics at Aalborg University (Denmark). From 2013 he is Full Professor and he holds the Chair of Power Electronics at Kiel University (Germany). He got offered and declined professorships at the Technical Universities of Ilmenau, Munich and Hamburg. He has published 600 technical papers (1/3 of them in international peer-reviewed journals) and a book. These works have received more than 42000 citations. Marco Liserre is listed in ISI Thomson report “The world’s most influential scientific minds” from 2014.

He is member of IAS, PELS, PES and IES. He has been serving all these societies in different capacities. In PELS he is AdCom member (second mandate), Co-Editor of the IEEE Open Access Journal in Power Electronics, Associate Editor of TPEL and JESTPE, Guest Editor of Several Special Issues of JESTPE, Technical Committee Chairman of the new Committee on Electronic Power Grid Systems and Member of the IEEE Digital Committee, IES-Liaison responsible, eGrid 2021 Workshop Co-chairman. He has received the IES 2009 Early Career Award, the IES 2011 Anthony J. Hornfeck Service Award, the 2014 Dr. Bimal Bose Energy Systems Award, the 2017 IEEE PELS Sustainable Energy Systems Technical Achievement Award, the 2018 IEEE-IES Mittelmann Achievement Award and 6 IEEE Journal Awards.

Chengdu, China
March 25-28, 2022

Invited Speaker I

Onsite Venue: 9th Meeting Room
会议九厅
Zoom ID: 891 2336 5574
14:45-15:10, Mar. 26 (GMT+8)

Prof. Farhad Shania
Murdoch University, Australia

Title: Recent and Future Research on Microgrid Clusters

Abstract: Electricity systems around the world are experiencing a radical transition as the consequence of replacing fossil fuels, used for electricity production, by sustainable and cleaner energies. The growing penetration of renewable energies requires smarter techniques capable of handling the uncertainties of these intermittent sources. Along with this change, traditionally centralised power systems are also converting into distributed self-sufficient systems, often referred to as microgrids, that can operate independently. This talk will focus on remote area microgrids as a hot research topic in Australia and Southeast Asia that have hundreds of remote and off-grid towns and communities, and islands. It is expected that remote area microgrids will strongly benefit these remote locations in the forthcoming years. This talk will briefly introduce the progress of research in this field around the world and Australia, and will also discuss some of the technical challenges associated with interconnection of neighbouring microgrids as a key step to improve their survivability in the course of unexpected imbalances between the demand and the available generation from intermittent renewable resources.

Bio: Professor Farhad Shahnia received his PhD in Electrical Engineering from Queensland University of Technology (QUT), Brisbane, in 2012. He is currently an A/Professor at Murdoch University. Before that, he was a Lecturer at Curtin University (2012-15), a research scholar at QUT (2008-11), and an R&D engineer at the Eastern Azarbayjan Electric Power Distribution Company, Iran (2005-08). He is currently a Fellow member of Engineers Australia, Senior Member of IEEE, and member of the Australasian Association for Engineering Education.
Farhad's research falls under Distribution networks, Microgrid and Smart grid concepts. He has authored one book and 11 book chapters and 200+ peer-reviewed scholarly articles in international conferences and journals, as well as being an editor of 6 books.

Farhad has won 5 Best Paper Awards in various conferences and has also received the IET Premium Award for the Best Paper published in the IET Generation, Transmission & Distribution journal in 2015. One of his articles was listed under the top-25 most cited articles in the Electric Power System Research Journal in 2015 while one of his 2015 journal articles has been listed under the top-5 most read articles of the Australian Journal of Electrical and Electronics Engineering. He was the recipient of the Postgraduate Research Supervisor Award from Curtin University in 2015 and the Australia-China Young Scientist Exchange Award from the Australian Academy of Technology and Engineering in 2016.

Farhad is currently a Subject Editor, Deputy Subject Editor, and Associate Editor of several journals including IEEE Access, IET Generation, Transmission & Distribution, IET Renewable Power Generation, IET Smart Grid, IET Energy Conversion and Economics, and International Transaction on Electrical Energy Systems and has served 35+ conferences in various roles such as General, Technical, Publication, Publicity, Award, Sponsorship, and Special Session Chairs.

Farhad has led the IEEE Western Australia Section as the 2020-2021 Chair, and was the 2019 Founding Chair of the IEEE Western Australia Industrial Electronics Society (IES) Chapter. He is currently the 2021-2022 Secretary of the IES's Technical Committees on Smart Grids.

Chengdu, China
March 25-28, 2022

Invited Speaker II

Onsite Venue: 9th Meeting Room
会议九厅
Zoom ID: 891 2336 5574
15:25-15:50, Mar. 26 (GMT+8)

Assist. Prof. Xiaokang Liu
Politecnico di Milano, Italy

Title: Advanced open-loop phasor detection technologies for enabling high-performance grid-tied VSC control

Abstract: Fast and effective detection of grid phasor (amplitude/phase) is an indispensable condition to enhance the inverter control performance. However, traditional closed-loop solutions usually require a long response time to achieve accurate phase synchronization, especially under non-ideal grid conditions. To address this problem, open-loop phase locking schemes based on the synchronous reference frame have been developed in recent years. These schemes are characterized by remarkable response speed, high accuracy, and easy implementation, as well as the ability to suppress multiple types of disturbances. This talk will focus on the open-loop phasor detection technologies, and introduce the basic principles and latest advances in the relevant research.

Bio: Xiaokang Liu received the Double M.Sc. degrees in electrical engineering from Xi'an Jiaotong University, Xi'an, China, and Politecnico di Milano, Milan, Italy, in 2016, and the Ph.D. degree (summa cum laude) in electrical engineering from Politecnico di Milano, in 2021.

He is currently an Assistant Professor with the Department of Electronics, Information, and Bioengineering, Politecnico di Milano. His research interests are in the field of Electromagnetic Compatibility (EMC), and include the modeling of distributed-parameter circuits, field-to-wire coupling and crosstalk in multi-wire structures, and experimental procedures and setups for EMC testing. He is also interested in the field of power electronics, including renewable energy, power quality, stability analysis, etc.

Dr. Liu is a recipient of the 2021 Richard B. Schulz Best EMC Transactions Paper Award, and the 2021 International Union of Radio Science (URSI) Young Scientist Award. He has served as the Guest Editor for the Chinese Journal of Electrical Engineering, and Electric Engineering.Farhad is currently a Subject Editor, Deputy Subject Editor, and Associate Editor of several journals including IEEE Access, IET Generation, Transmission & Distribution, IET Renewable Power Generation, IET Smart Grid, IET Energy Conversion and Economics, and International Transaction on Electrical Energy Systems and has served 35+ conferences in various roles such as General, Technical, Publication, Publicity, Award, Sponsorship, and Special Session Chairs.

Farhad has led the IEEE Western Australia Section as the 2020-2021 Chair, and was the 2019 Founding Chair of the IEEE Western Australia Industrial Electronics Society (IES) Chapter. He is currently the 2021-2022 Secretary of the IES's Technical Committees on Smart Grids.

Chengdu, China
March 25-28, 2022

Invited Speaker III

Onsite Venue: 9th Meeting Room
会议九厅
Zoom ID: 891 2336 5574
15:50-16:15, Mar. 26 (GMT+8)

Assoc. Prof. Sayed Abulanwar
Mansoura University, Egypt

Title: Hybrid AC/DC Microgrids operation and control

Abstract: Microgrids (MGs) powered by hybrid renewable energy resources such as wind turbine generators and photovoltaic arrays are recently attracting extensive attention to reduce carbon footprint, diversify energy supply and resuscitate local economies particularly in developing countries. Hybrid AC/DC MGs combine pros of both AC and DC subgrids and reduce conversion stages thus increasing operation efficacy. Consequently, hybrid MGs are promising recourse for either sub-optimal underprivileged remote communities or even developed load centers that are segregated from main utilities to supply their electricity needs. Besides, steady population growth and ever-increasing load demand prompted proactive policies to secure sustainable and reliable power supply via hybrid AC/DC autonomous MGs whenever grid connection is unavailable or uneconomic. Though, MGs are prone to remarkable voltage and/or frequency deviations owing to climatic vagaries, e.g., solar radiation and wind speed changes; longterm supplementary energy storage systems can efficaciously suppress renewble resources irregularities so that standalone MGs perform as conventional power plants. To tackle rapid power variations and concurrently ensure MG autonomy, hybrid energy storage systems characterized not only by high power density (e.g., supercapacitors SCs) but also high energy density (e.g., hydrogen management scheme HMS) are indispensable. HMS normally includes an electrolyzer that converts surplus power to hydrogen in a storage tank to be later used by fuel cells (FCs) to provide necessary aid during MG insufficiency. Recently, hydrogen gas has emerged as a favorable energy carrier for long-term electrical energy storage. Despite, HMS conversion efficiency is not as efficient as other storage devices such as lithium-ion batteries, hydrogen storage tanks are featured by relatively lower cost of construction and maintenance, easier expansion and lower self-discharge rates, thus are preferable for MG applications.

Bio: Sayed Abulanwar (MIEEE) received the B.S. and M.S. degrees in Electrical Engineering, Mansoura University, Egypt, in 2005 and 2010, respectively, and the Ph.D. degree from Energy Technology Department, Aalborg University, Denmark, in 2016. He is currently an associate professor, Faculty of Engineering, Mansoura University, Egypt. He is a Guest Editor, IET Renewable Power Generation. His research includes hybrid AC/DC Microgrids, wind energy conversion systems, HVDC systems, transients in power systems and grid-connected converters.

Best Student Paper Competition I

Time: 09:00-10:20 (GMT+8) Sunday, March 27, 2022

Zoom ID: 891 2336 5574

Topic: Smart Grid and Management

Chair: Chuan He, Sichuan University, China

Venue: 9th Meeting Room(会议九厅)

Notes:

- ✓ For Onsite Attendees, please arrive at the conference rooms 10 minutes before the whole session starts.
- ✓ For Online Attendees, please Sign in the conference rooms 10 minutes before the whole session starts.
- ✓ Timing: a maximum of 20 minutes in total, including 2-3 minutes for Q&A.
- ✓ Certificate of Presentation will be sent to each presenter's email box after the conference.
- ✓ One Best Presentation will be selected from each parallel session and author of best presentation will be announced at the end of this session.

09:00-09:20	E019	A Novel DC Drop Point Selection Method Considering The Multiple Operation Scenarios of Receiving-end Power Grid **Mr. Yaning Wu,** Yi Luo, Ying Wang Huazhong University of Science and Technology, China
09:20-09:40	E060	Optimal Configuration of Microgrids based on Fuzzy Scenario Clustering **Mr. Haipeng Li,** Yang Mi, Jin Deng, Boyang Chen Shanghai University of Electric Power,China
09:40-10:00	E086	Multi-Scenario Planning of Integrated Energy Distribution Network Based on Distflow Model **Mr. Tao Long,** Zhaohong Bie, Lizhou Jiang, Xu Wang, Gengfeng Li Xi'an Jiaotong University, China
10:00-10:20	E3007	A deep deterministic policy gradient based Method for Distribution System Load Frequency Coordinated Control with PV and ESS **Mr. Guangdou Zhang,** Jian Li, Yankai Xing, Olusola Bamisile, Qi Huang University of Electronic Science and Technology, China

Best Student Paper Competition II

Time: 10:35-11:55 (GMT+8) Sunday, March 27, 2022

Zoom ID: 891 2336 5574

Topic: Power Systems and Control

Chair:

Venue: 9th Meeting Room(会议九厅)

Notes:

- ✓ For Onsite Attendees, please arrive at the conference rooms 10 minutes before the whole session starts.
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- ✓ One Best Presentation will be selected from each parallel session and author of best presentation will be announced at the end of this session.

10:35-10:55	E027	Auxiliary control of grid-connected for wind farm based on flexible DC electric power transmission **Ms. Xiaomin Tong,** Min' an Tang, Qianqian Wang, Xiyuan Xu Lanzhou Jiaotong University, China
10:55-11:15	E092	Fault Diagnostics of Oil-immersed Power Transformer via SMOTE and GWO-SVM **Mr. Xinghui Li,** Yuan Li, Yaoyu Xu, Rui Li, Guanjun Zhang Xi'an Jiaotong University, China
11:15-11:35	E3016	A Novel Multi-task Learning Method with Attention Mechanism for Wind Turbine Blades Imbalance Fault Diagnosis **Mr. Jianjun Chen,** Weihao Hu, Di Cao, Zhenyuan Zhang, Zhe Chen University of electronic science and technology of China
11:35-11:55	E098	Study on Insulation Characteristic of PET based on HN Dielectric Relaxation Model **Mr. Quanhao Li,** Qian Wang, Zhigang Ren, Jingzhu Teng, Yuchen Zhao, Daning Zhang Xi'an Jiaotong university, China

Best Student Paper Competition III

Time: 09:00-10:20 (GMT+8) Sunday, March 27, 2022

Zoom ID: 816 5927 2794

Topic: Renewable Energy

Chair:

Notes:

- ✓ Please Sign in the conference rooms 10 minutes before the whole session starts.
- ✓ Timing: a maximum of 20 minutes in total, including 2-3 minutes for Q&A.
- ✓ Certificate of Presentation will be sent to each presenter's email box after the conference.
- ✓ One Best Presentation will be selected from each parallel session and author of best presentation will be announced at the end of this session.

09:00-09:20	E025	Optimal Scheduling of Electricity-gas Integrated Energy System Considering Wind Power Uncertainty **Mr. Jiajun Ping,** Tianran Li, Song He Nanjing Normal University, China
09:20-09:40	E080	A reactive power control method based on dynamic virtual impedance for pv micro-grid **Mr. Zipeng Zhou,** Hao Zhao, Zhaohui He, Peihao Yang Guangdong University of Technology, China
09:40-10:00	E108	Study on the pyrolysis Characterization of rice husk var in CO2/N2 atmosphere **Mr. Bingyan Hou,** Zeguo Liu, Jian Zhao, Chunliang Li Ocean University of China, China
10:00-10:20	E143	The research on the construction of confidence interval model for solar, hydropower and load demand **Ms. Jiaoyiling Zhu**, Weihao Hu, Xiao Xu, Shihua Luo, Haoming Liu, Chenbin Hu, Wei Zhan, Qiming Yan, Qi Huang University of Electronic Science and Technology, China

Best Student Paper Competition IV

Time: 10:35-12:20 (GMT+8) Sunday, March 27, 2022

Zoom ID: 816 5927 2794

Topic: Microgrid and Market Management

Chair: Zhi Cai, China Electric Power Research Institute, China

Notes:

- ✓ Please Sign in the conference rooms 10 minutes before the whole session starts.
- ✓ Timing: a maximum of 20 minutes in total, including 2-3 minutes for Q&A.
- ✓ Certificate of Presentation will be sent to each presenter's email box after the conference.
- ✓ One Best Presentation will be selected from each parallel session and author of best presentation will be announced at the end of this session.

10:35-10:55	E085	Finite-time distributed coordination and large-signal stabilization for energy storage system in DC Microgrids **Mr. Jilin Lang,** Chuanlin Zhang, Chenggang Cui Shanghai University of Electric Power, China
10:55-11:15	E095	The Day-ahead Bidding Strategy of Virtual Power Plant for Participating in Electric Energy Market and Peak Regulation Market **Mr. Xuanxuan Fan,** Lianyiong Zhang, Hui Sun, Shubo Hu, Changhai Sun, Baohang Zhu Dalian University of Technology, China
11:15-11:35	E101	Real-time Linearized Scheduling Model for Distribution Networks with Aggregated Thermostatically Controlled Loads **Dr. Congying Wei,** Yang Wang, Chunming Wang, Jian Xu, Siyang Liao, Jun Wang Wuhan University, China
11:35-11:55	E109	A Data-Driven Identification of Key Links in Power System Based on Random Matrix Theory **Mr. Baoshuo Sun,** Shubo Hu, Xueli Lu, Zhengnan Gao, Hui Sun, Songnan Liu Dalian University of Technology, China
11:55-12:20	E146	Decentralized P2P Energy Trading of Multiple Microgrids with Hydrogen Refueling Stations **Mr. Li Pan,** Xiao Xu, Junyong Liu, Weihao Hu Sichuan University, China

Onsite Session 1

Time: 13:30-15:15(GMT+8) Sunday, March 27, 2022

Zoom ID: 891 2336 5574

Topic: Optimization and Market of Integrated Electricity and Natural Gas Systems

Chair: Chuan He, Sichuan University, China

Venue: 9th Meeting Room (会议九厅)

Notes:

- ✓ For Onsite Attendees, please arrive at the conference rooms 10 minutes before the whole session starts.
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- ✓ Timing: a maximum of 15 minutes in total, including 2-3 minutes for Q&A.
- ✓ Certificate of Presentation will be sent to each presenter's email box after the conference.
- ✓ One Best Presentation will be selected from each parallel session and author of best presentation will be announced at the end of this session.

13:30-13:45	E068	Coordinated Operation of Power System and Energy Storage In the Presence of High Penetration of Solar Generation **Ms. Yuqi Zhang,** Chuan He, Min Zhang and Tengxin Wang Sichuan University, China
13:45-14:00	E-703	Method for Vulnerability Analysis of Communication Link in Electric Cyber Physical System Hua Zhang**, Dr. Xueneng Su** State Grid Sichuan Electric Power Company, China
14:00-14:15	E073	Multi-energy Complementary Clean Energy Microgrid Planning Zhang Menglu, Wang Jiatong, He Chuan, Xie Keyu, **Ms. Zhang Xinyuan**, Lv Xiangmei Sichuan University, China
14:15-14:30	E168	Research on equipment configuration and operation optimization of microgrid system **Mr. Zhengji Meng**, Liang Meng, Lei Wang, Hao Zhou, Xuekai Hu State Grid Hebei Electric Power Research Institute, China
14:30-14:45	E138	A goal oriented reliability assessment of system protection devices Lixiong Xu, Yang Liu, Jun Chen, Shiguang Xu, Xiong Chen, **Ms. Linxiu Li** Sichuan University, China
14:45-15:00	E071	Day-Ahead Scheduling With Renewable Generation Considering Shared Energy Storage **Ms. Anqi Xv,** Chuan He, Min Zhang, Tengxin Wang Sichuan University, China

15:00-15:15	E081	Classification and Potential Evaluation of Residential Users in Demand Response Based on NILM Data Ran Shen, Liangfeng Jin, Yifan Wang, Qingjuan Wang, Linna Ni, **Mr. Haiyue Yu** Zhejiang University, China
15: 15-15:30	E099-A	Data-Driven Real-Time Dispatchable Region of Renewable Energy Generation in AC Power Systems **Prof. Zhigang Li** South China University of Technology, China

Onsite Session 2

Time: 13:30-15:30 (GMT+8) Sunday, March 27, 2022

Zoom ID: 816 5927 2794

Topic: Condition Monitoring and Intelligent Diagnosis

Chair: Hongzhong Ma, Hohai University, China

Venue: 10th Meeting Room (会议十厅)

Notes:

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- ✓ Timing: a maximum of 15 minutes in total, including 2-3 minutes for Q&A.
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- ✓ One Best Presentation will be selected from each parallel session and author of best presentation will be announced at the end of this session.

13:30-13:45	E102	An Online Detection Method of Short Circuit forBattery Packs Hongzhong Ma, **Mr. Qifan Yang** Hohai University, China
13:45-14:00	E-801	Capacitor Monitoring for Modular Multilevel Converters Based on Intelligent Algorithm **Mr. Hao Ding**, Qingsong Wang, Fujin Deng, Ming Cheng, Giuseppe Buja Southeast University, China
14:00-14:15	E-802	Detection And Analysis of GIS Discharge Defects Based on Deep Learninng Method Ran Ding, Ke Zhao, **Dr. Yun Teng**, Tianxin Zhuang, Jianjun Liu, Jinggang Yang State Grid Jiangsu Electric Power Research Institute, China
14:15-14:30	E-803	The Application of High Frequency And Ultra High Frequency Partial Discharge Detection to Gas Insulated Switchgear **Mr. Yao Lu,** Zhibin Qiu, Caibo Liao, Tonghongfei Li, Zijian Wu, Yong Hu Nanchang University ,China
14:30-14:45	E153	Fault Diagnosis for Metal Particles within GIL Based on VMD-SVM Hongzhong Ma, **Dr. Dawei Duan**, Qifan Yang, Yan Yan, Nan Li, Jiajia Cui Hohai University, China

14:45-15:00	E076	Fault Diagnosis of Power Converter based on Multi-Channel 1D-BNCNN for Tokamak Magnetic Field Power Supply **Dr. Qin Hang,** Heng Zhang, Xue Lv, Hua Li, Weisheng Li Chongqing University of Posts and Telecommunications, China
15:00-15:15	E156	Study on Simulation of Electrical Characteristics of Grid-connected Photovoltaic Failure Zhenhua Xu, Deyuan Lin, Yan Li, **Mr. Ye Yao**, Liwei Zheng, Yi Su State Grid Fujian Electric Power Company, China

Onsite Session 3

Time: 15:45-17:45 (GMT+8) Sunday March 27, 2022

Zoom ID: 891 2336 5574

Topic: Power Engineering and System Monitoring

Chair:

Venue: 9th Meeting Room (会议九厅)

Notes:

- ✓ For Onsite Attendees, please arrive at the conference rooms 10 minutes before the whole session starts.
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- ✓ One Best Presentation will be selected from each parallel session and author of best presentation will be announced at the end of this session.

15:45-16:00	E022	Simulation analysis of the breaking process of 550kV 80kA SF6 circuit breaker Hao Zhang, Zhijun Wang, **Mr. Miaoxin Li**, Yongqi Yao, Junfeng Li, Jianlei Zhao Pinggao Group Co., Ltd, China
16:00-16:15	E037	Investigation on the Surface Flashover Characteristics of Epoxy Composites in C4F7N/CO2 Mixture **Ms. Jinshu Li**, Junhong Chen, Junhao Dong, Peng Sun, Junbo Deng, Guan-Jun Zhang Xi'an Jiaotong University, China
16:15-16:30	E1005	Tripping risk analysis of wind turbines under insufficient margin of reactive power and impact load **Dr. Chang Liu**, Zhixun Wang, Tian Quan, Wenfeng Chen, Hongyuan Gao, Donghai Chen, Zhixun Jiang, Wei Wang Changjiang Institute of Survey, Planning, Design and Research, China
16:30-16:45	E149	Analysis of The Transfer Characteristic of DC Voltage Divider in UHVDC System and its Transient Response **Mr. Zhou Hao,** Su Can, Meng Zhengji, Yan Peng, Hu Xuekai State Grid Hebei Electric Power Research Institute, China
16:45-17:00	E158	A Novel Grounding Electrode Line Protection Method Based on Harmonic Impedance **Mr. Yuelang Zhang**, Xiaopeng Li, Yufei Teng, Jiping Lu, Yi Zhuang State Grid Sichuan Electric Power Research Institute, China

17:00-17:15	E166	DC-DC Current Perturbation Based EIS Measurement for PEM Stack **Mr. Jishen Cao,** Kai Li, Xiangyu Luan, Chengjie Han, Hao Tang University of Electronic Science and technology, China
17:15-17:30	E128	Quantitative Assessment of Degree of Polymerization of Insulating Paper by Optimized Bayesian-SVR Algorithm Shaorui Qin Taiyun Zhu Shenglong Zhu Jianlin Li, Yanguo Ke, **Mr. Han Li,** Yuan Li Xi'an Jiaotong University, China
17:30-17:45	E3012	Grid-forming Converter in High Penetration of Converter-Interfaced Generation Large-Scale Power System: a Review of Synchronization Stability **Dr. Yankai Xing**, Jian Li, Guangdou Zhang, Olusola Bamisile, Qi Huang University of Electronic Science and Technology of China, China

Onsite Session 4

Time: 15:45-17:30 (GMT+8) Sunday, March 27, 2022

Zoom ID: 816 5927 2794

Topic: Renewable Energy and Power Engineering

Chair: Li Pan, Sichuan University, China

Venue: 10th Meeting Room (会议十厅)

Notes:

- ✓ For Onsite Attendees, please arrive at the conference rooms 10 minutes before the whole session starts.
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- ✓ Certificate of Presentation will be sent to each presenter's email box after the conference.
- ✓ One Best Presentation will be selected from each parallel session and author of best presentation will be announced at the end of this session.

15:45-16:00	E3011	A Cooperative Control Strategy against Cyber-attacks for Power System with High Penetration Wind Farm **Mr. Kai Yang**, Jian Li, Guangdou Zhang, Yankai Xing, Olusola Bamisile,Qi Huang University of Electronic Science and Technology of China, China
16:00-16:15	E151	Time delay estimation and compensation method of synchronous signal generator for PMU test and calibration **Mr. Zhekun Piao,** Hao Liu North China Electric Power University ,China
16:15-16:30	E3014	Long-term prediction of solar radiation using XGboost, LSTM, and machine learning algorithms **Prof. Olusola Bamisile,** Chukwuebuka J. Ejiyi, Emmanuel Osei-Mensah, Ijeoma A. Chikwendu, Jian Li, Qi Huang Chengdu University of Technology, China
16:30-16:45	E173	A framework for evaluating the performance of distributed renewable energy integration measures Fulong Song, Yangzi Wang, Shengnan Zhao, Caihao Liang, **Mr. Kunyue Nie** Shandong University, China

16:45-17:00	E3013	A GRU-based Short-Term Multi-Energy Loads Forecast Approach for Integrated Energy System **Mr. Chaoqun Lu,** Jian Li, Guangdou Zhang, Zixu Zhao, Olusola Bamisile, Qi Huang University of Electronic Science and Technology of China, China
17:00-17:15	E028	A Method for Evaluating the Aging State of Oil-Paper Insulation Using Frequency Domain Spectroscopy Qingpeng Ding, Bowen Yao, Kui Liang, Nan Jia, Zongjie Liu, Daning Zhang, **Mr. Huanmin Yao** State Grid Jining Power Supply Company, China
17:15-17:30	E3015	Energy Saving in 5G Substations Using Edge Caching for Adaptive Immersive Media Streaming **Mr. Emmanuel Osei-Mensah,** Saqr Khalil Saeed Thabet, Olusola Bamisile, Emelia Asiedu-Ayeh, Victor Kwaku Agbesi, Jian Li University of Electronic Science and Technology of China

Online Session 5

Time: 13:30-15:30 (GMT+8) Sunday, March 27, 2022

Zoom ID: 841 0048 1462

Topic: Modern Energy Science and Technology

Chair: Jingbo Wang, Kunming University of Science and Technology, China

Notes:

- ✓ Please Sign in the conference rooms 10 minutes before the whole session starts.
- ✓ Timing: a maximum of 15 minutes in total, including 2-3 minutes for Q&A.
- ✓ Certificate of Presentation will be sent to each presenter's email box after the conference.
- ✓ One Best Presentation will be selected from each parallel session and author of best presentation will be announced at the end of this session.

13:30-13:45	E045	Model and Method of Capacity Planning of Energy Storage Capacity for Integrated Energy Station Bin Bian, Zhihuan Du, **Mr. Cheng Hao**, Hongwei Wu, Longfei Yan, Zan Hou, Yu Chen Tsinghua Sichuan Energy Internet Research Institute, China
13:45-14:00	E094	Influence mechanism and law of source-side factors on voltage unbalance in wind power gathering network Wu Linlin, Li Yunhong, Wang Xiao, Chen Can, Xu Man , Sun Dawei, **Ms. Jiaying Yan** North China Electric Power University, China
14:00-14:15	E053	Real-time Reactive Power Regulation Capacity Assessment of DFIG Wind Farms Guixing Yang, **Mr. Yaoxiang Wang**, Yuan Jia, Guoyi Xu North China Electric Power University, China
14:15-14:30	E089	The Vulnerability Evaluation Method for Regional Multiple Energy System Ran Hu, **Dr. Longlong Shang**, Shicong Deng, Mingyu Ou Shenzhen Power Supply Bureau, China Southern Grid, China
14:30-14:45	E106	Day-ahead Wind Power Prediction Based on BP Neural Network Optimized by Improved Sparrow Search Algorithm **Ms. Xuan Yu,** Longfu Luo Hunan University, China
14:45-15:00	E175	Illustration of Maximum Power Point Tracking of Photovoltaic Array with Boost Converter Via Perturb and Observe Algorithm Divya R, **Ms. Ashitha R Nair**, Harisankar S, Sree Sai V G, Manjula G Nair Amrita Vishwa Vidyapeetham, India

Online Session 6

Time: 13:30-15:30 (GMT+8) Sunday, March 27, 2022

Zoom ID: 879 1976 6974

Topic: Thermal Energy and Power Engineering

Chair:

Notes:

- ✓ Please Sign in the conference rooms 10 minutes before the whole session starts.
- ✓ Timing: a maximum of 15 minutes in total, including 2-3 minutes for Q&A.
- ✓ Certificate of Presentation will be sent to each presenter's email box after the conference.
- ✓ One Best Presentation will be selected from each parallel session and author of best presentation will be announced at the end of this session.

13:30-13:45	E018	Theoretical Study on Non-pump Rankine Cycle of Ocean Thermal Energy **Ms. Suyun Yi,** Zhixiang Zhang, Jian Zhao, Wenyi Peng, Guoqiang Sun, Guoxiang Yu Ocean University of China, China
13:45-14:00	E047-A	An Affine Arithmetic-Based Optimization method for Combined Electric and Heat Microgrid Mingjie Cai, **Dr. Feixiong Chen** Fuzhou University, China
14:00-14:15	E020	Performance analysis of vortex tube-ejector absorption refrigeration cycle driven by Ocean Thermal Energy **Mr. Wenyi Peng.** Zhixiang Zhang. Jian Zhao. Suyun Yi. Guoqiang Sun. Guoxiang Yu Ocean University of China, China
14:15-14:30	E059	Air conditioning load forecasting model considering EV and urban heat island effect Xin Zhao, Wanlei Xue, **Mr. Xiaoyang Lian**, Mingqiang Wang and Ying Mu State Grid Shandong Electric Power Company, China
14:30-14:45	E110	A Bi-level Optimal Control for Heat Pump participating in Peak Shaving considering Time-of-use Price Yuqi Wang, Song Gao, Hanghang Liu, Daning You, Meng Liu, **Ms. Yuxi Zhang** Shandong University, China
14:45-15:00	E150	A soft-measuring method to predict turbulence parameters in fluid delivery systems **Mr. Sen Nie,** Huiqin Zeng Qingdao City University, China

15:00-15:15	E165	Prediction of Boiler Control Parameters Based on LSTM Neural Network **Ms. Yuxin Hu,** Jian Zhao Ocean University of China, China
15:15-15:30	E176	Flame Hot Spot Tracking and Temperature Distribution of Combustion Flame Using New Technique **Mr. Ahmed Abdelrahim,** Shi Liu, Nihad Abdalla North China Electric Power University, China

Online Session 7

Time: 15:45-17;45 (GMT+8) Sunday, March 27, 2022

Zoom ID: 841 0048 1462

Topic: Electronic Materials and Battery Development

Chair:

Notes:

- ✓ Please Sign in the conference rooms 10 minutes before the whole session starts.
- ✓ Timing: a maximum of 15 minutes in total, including 2-3 minutes for Q&A.
- ✓ Certificate of Presentation will be sent to each presenter's email box after the conference.
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15:45-16:00	E033	Analysis of Container Expansion Method in New Generation of Dispatch Automation system **Mr. Zhou Wan,** Gao Jie, He Ming, Luo Rongsen, He Rui, Li Yi State Grid Sichuan Electric Power Co., Ltd, China
16:00-16:15	E135	A goal oriented reliability assessment of system protection devices Pan Duan, **Ms. Zuohong Yang**, Ya He, Ben Zhang, Lianfang Zhang, Fengyi Liu, Yingqiao Shi Sichuan University, China
16:15-16:30	E012	Parametric Average-Value Modeling of Diode Rectifier Systems Based on Neural Network Kangkang Wang, Wei Wei, **Dr. Shilin Gao**, Shaowei Huang, Xinwei Sun, Bo Zhou Tsinghua University, China
16:30-16:45	E130	Rasearch on Pressure Characteristics of Arc Ignited by Metal Wire in Closed Container **Mr. Yiqing Tao**, Shengwen Shu, Jian Qian, Minglong Zhang Fuzhou University, China
16:45-17:00	E163	A Data-driven MPC Energy Optimization Management Strategy for FuelCell Distributed Electric Propulsion UAV **Mr. Zhihao Min**, Tao Lei, Xingyu Zhang, Gao Qinxiang, Xiaobin Zhang Northwestern Polytechnic University, China
17:00-17:15	E164	Numerical Investigation and Analyzation of an Anode-Supported Tubular Solid Oxide Fuel Cell **Dr. Shuaiwei Qi,** Lei Xu, Ying Song, Wei Jiang, Gaoyang Hou Northwest A&F University, China

17:15-17:30	E3004	A Systematic Approach for Rapid Battery State of Charge Measurement and Estimation **Dr. Chuan Jiang,** Hao Zhou CRRC Qingdao Sifang Rolling Stock Research Institute Co., Ltd, China
17:30-17:45	E055	Fast Pooling Based Multi-Scale Graph Neural Network and Its Application in Electric Power System **Ms. Zhenyuan Ma,** Yuanpeng Tan, Zhijian Li, Huifang Xu, Liqing Liu, Kejia He China Electric Power Research Institute, China

Online Session 8

Time: 15:45-17;45 (GMT+8) Sunday, March 27, 2022

Zoom ID: 879 1976 6974

Topic: Voltage Control and Power Transmission

Chair: Jinrui Tang, Wuhan University of Technology, China

Notes:

- ✓ Please Sign in the conference rooms 10 minutes before the whole session starts.
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15:45-16:00	E170	Analysis of Deep Depletion Effect in SOI LDMOS Substrate with Numerical Simulation **Mr. Jian Wu,** Xiaoming Yang, Tianqian Li, Baiqiang Li, Zhiguo Yang Xihua University, China
16:00-16:15	E147	Detection of Latent Fault in Medium Voltage Distribution Cables Based on Guiding Learning Model **Ms. Xue Chang,** Yongliang Liang, Jie Lou, Wenshan Zhang, Bingguang Han, Jia Zhong, Kejun Shandong University, China
16:15-16:30	E066	Transmission line protection based on transient energy of fault current **Dr. Yarong Guo**, Zexin Zhou, Xingguo Wang, Dingxiang Du, Qi Cheng, Jiaqi Liu, China Electric Power Research Institute, China
16:30-16:45	E114	Research on Fusion Algorithm of Lightning Strike Trip Warning for Mountain Transmission Lines Tao Yuan, **Mr. Xiaotian Wang**, Wenxia Sima, Potao Sun, Fangrong Zhou Chongqing University, China
16:45-17:00	E162	Anti-interference measurement method of zero sequence capacitance of transmission lines based on harmonic component Tao Yan, Yi Tan, Hongjiang Li, **Mr. Mingxin Gao**, Zhijian Hu Wuhan University, China
17:00-17:15	E065	Data-driven Comprehensive Evaluation Model Based on the Radar Chart for the Operating State of XLPE Cables Taonan Tang, **Mr. Song Wang**, Zhiyong Wang, Yanxia Chen, Yu Wen State Grid Beijing Electric Power Company, China

17:15-17:30	E115	Experimental Study on Influence Factors of Capacitive Coupling of Adjacent Directly Buried Cables under Impulse Current Considering Soil Discharge Channel Tao Yuan, **Mr. Xiejun Du**, Wenxia Sima, Ming Yang, Xiaochuan Li, Jialun Li Chongqing University, China
17:30-17:45	E079	Research on photovoltaic low voltage ride through based on new model predictive control Zhe Jing, Haomiao Zhang, Peihao Yang, **Mr. Zipeng Zhou** Guangdong University of Technology, China

Online Session 9

Time: 09:00-10:15 (GMT+8) Monday, March 28, 2022

Zoom ID: 891 2336 5574

Topic: Artificial Intelligence Application in Energy Systems

Chair: Bo Yang, Kunming University of Science and Technology, China

Notes:

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09:00-09:15	E-301	MRFO-AEO based batteries parameter identification for life prediction Junjie Lan, Jinlin Wei, Ting Luo, Dabin Huang, Hao Zhang, **Prof. Bo Yang.** Kunming University of Science and Technology, China
09:15-09:30	E-303	A novel graph reinforcement learning approach for stochastic dynamic economic dispatch under high penetration of renewable energy Peng Li, Wenqi Huang, Zhen Dai, Jiaxuan Hou, Shang Cao, Jiayu Zhang, **Mr. Junbin Chen** South China University of China, China
09:30-09:45	E-302	MRFO based optimal filter capacitors configuration in substations with renewable energy integration Jinlin Wei, Junjie Lan, Peng Jiang, Wenjun Mao, Kaidi Zeng, **Prof. Bo Yang.**, Kunming University of Science and Technology, China
09:40-10:00	E-304	Optimal DC Electric Spring Planning based on Intelligent Algorithm **Ms. Siwei Li**, Qingsong Wang, Fujin Deng, Giuseppe Buja Southeast University, China
10:00-10:15	E-305	Multi-objective Optimization for Optimal Placement and Sizing of DG in Distribiton System **Ms. Lingfang Li**, Wangtong Cai, Yuang Feng, Peng Sun, Siyu Lu, Junwen Yang, Zhifei Guo, Yixuan Chen, Baorong Zhou Yunnan Power Grid Planning & Research Center, China

Online Session 10

Time: 09:00-10:15 (GMT+8) Monday, March 28, 2022

Zoom ID: 816 5927 2794

Topic: Intelligent Control and Management of Modern Power and Energy Systems

Chair: Guangdi Li, Northeastern University, China

Notes:

- ✓ Please Sign in the conference rooms 10 minutes before the whole session starts.
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09:00-09:15	E-501	Optimal Operation Strategy of Multi-energy System Considering Energy Supply for Waste Treatment Li Guangdi, Xu Guoyi , Zhou Bowen, **Mr. Hu Jinpeng**, Zhao Ying. Northeastern University,China
09:15-09:30	E-503	Research on Dynamic Aggregation Model and Equivalent Method for Distributed Resources Jiang Cheng, Wang Zhenyu, Xiong Junjie, **Ms. Rao Zhen**, Feng Pengpai, State Grid Jiangxi Electric Power Co., Ltd, China, China
09:30-09:45	E124	Electric Power Consumption and Pollutant Emission: A Study Based on DCCA and MF-DCCA Guang-ye Li, Jia-xin Zhang, Xin Wen, Lang-ming Xu, **Prof. Ying Yuan** Northeastern University, China
09:40-10:00	E122	Design of Optical Storage Inverter system for Home complex based on Integrated Energy system **Mr. Kaibin Wu** State Grid Electric Power Research Institute Wuhan Efficiency Evaluation Company Limited, China
10:00-10:15	E-504	Abnormal Line Loss Data Detection and Correction Method **Mr. Zhou Sicheng**, Xue Jiguang, Feng Zhibo, Dong Sitong, Qu Junji Northeastern University, China

Online Session 11

Time: 09:00-10:30 (GMT+8) Monday, March 28, 2022

Zoom ID: 841 0048 1462

Topic: Internet of Things Applications in Power Distribution Systems

Chair: Jinrui Tang, Wuhan University of Technology, China

Notes:

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09:00-09:15	E-401	Zero-mode Current Distribution Analysis in Neutral Ungrounded Distribution Systems with Distributed Photovoltaic Generators under SPG Faults Jinrui Tang, **Ms. Wanying Qi**, Chen Yang, Zhenhai Li. Wuhan University of Technology, China, China
09:15-09:30	E069	Impact of Time Synchronization Accuracy on Zero-mode Transient Signal-based Fault Location in Neutral Ungrounded Distribution Systems Jinrui Tang, **Mr. Zhenhai Li.** Wuhan University of Technology, China, China
09:30-09:45	E172	Rapid voltage sensitivity analysis method in LVDNs with high penetration of rooftop photovoltaics and electric vehicles Muchao Xiang, **Mr. Zilong Zhao**, Manjia Liu, Jinrui Tang, Chen Jin State Grid Hubei Electric Power Research Institute, China
09:40-10:00	E111	A novel industry-classification final energy consumption structure clustering method based on improved K-means algorithm **Mr. Zilong Zhao,** Jinrui Tang, Jianchao Liu, Ganheng Ge, Honghui Yang Wuhan University of Technology, China
10:00-10:15	E171	A novel large-scale electric vehicle charging load forecasting method and its application on regional power distribution networks Manjia Liu, **Mr. Zilong Zhao**, Muchao Xiang, Jinrui Tang, Chen Jin State Grid Hubei Electric Power Research Institute, China

10:15-10:30	E072	Research and Development of Novel Transient Waveform Recording Fault Indicators Used in Power Distribution Networks **Ms. Wanying Qi**, Jinrui Tang, Chen Yang, Zhenhai Li, Ling Zhou Wuhan University of Technology, China

Online Session 12

Time: 10:45-12:15 (GMT+8) Monday, March 28, 2022

Zoom ID: 891 2336 5574

Topic: Demand Response and Direct Load Control for Renewable Energy Integration into Power Grid

Chair: Siyang Liao, Wuhan University, China

Notes:

- ✓ Please Sign in the conference rooms 10 minutes before the whole session starts.
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10:45-11:00	E051	Stochastic optimal dispatching of electrothermal integrated energy system considering uncertainty of heat load **Ms. Ling Song**, Haotian Wu, Deping Ke, Jian Xu, Jiangwen Zheng, Zaixun Ling, Yibo Cui Wuhan University, China
11:00-11:15	E006	Short-term load forecasting of energy internet based on energy consumption structure **Ms. Jiahui Li**, Lili Wei, Xinmin Li,Baolin Yin, Xin Wang Southwest University of Science and Technology, China
11:15-11:30	E083	A Deterministic and Probabilistic Prediction Method for Short-term Photovoltaic Power Considering Spatial Correlation Dong Liu, Long Zhao, Ming Yang, Zhiyuan Si, **Mr. Chuanqi Wang**, Yating Liu, Zhiyong Shi Shandong University, China
11:30-11:45	E123	Variable weight power flow entropy based on load interval partitioning Wang Min, **Mr. Wu Chao**, Yu Zixuan, Zhou Jian, Shi Shanshan Hohai university, China
11:45-12:00	E180	A Multi-dimensional Copula Wind Speed Correction Method for Ultra-short-term Wind Power Prediction **Mr. Chuanqi Wang**, Ming Yang, Yixiao Yu, Menglin Li, Zhiyuan Si, Yating Liu, Fangqing Yan Shandong University, China
12:00-12:15	E-601	Evaluation and application of energy efficiency in electrolytic aluminum industry Dezhi Li, Ming Zhong, Hongyin Chen, Yi Guo, Yongfeng Huo, **Mr. Junjun Shu** China Electric Power Research Institute Co., Ltd, China

Online Session 13

Time: 10:45-12:30 (GMT+8) Monday, March 28, 2022

Zoom ID: 816 5927 2794

Topic: The Electricity Market and the Utilization of Clean Energy

Chair: Zhi Cai, China Electric Power Research Institute, China

Notes:

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10:45-11:00	E008	Research on Integrated Power System Maintenance Planning System and Its Key Technologies **Mr. Jiali Zhang,** Zhi Cai, Chenxu Hu, Fengbin Zhang, Yueshuang Bao, Xinyuan Liu and HuipingZheng China Electric Power Research Institute,China
11:00-11:15	E015	Day-ahead electricity price forecasting strategy based on machine learning and optimization algorithm Caixin Sun, Xiaofeng Pan, Gang Li, Pengfei Li, Guoqing Gao, Ye Tian, **Mr. Gesheng Xu** Huaneng Clean Energy Research Institute, China
11:15-11:30	E-202	Similarities and Differences between Internal European Market for Electricity and Chinese Electricity Market **Mr. Qiuyang Ma**, Jing Liu, Zhongyang Chen, Bin Han, Zhi Cai State Grid Energy Research Institute, China
11:30-11:45	E-203	The Framework Design of Electricity Market Mechanism under the New Electric Power System for 2030 **Ms. Xiaojing Hu**, Jinsong Li, Qiang Ding, Xiaonan Yang, Zhi Cai, Dan Xu China Electric Power Research Institute, China
11:45-12:00	E016	A decision-making model for monthly or ten-day time-sharing transactions Xiaojiang Guo, Xuhui Shen, Jinliang Kong, Nan Li, Litao Song, Zheng Zhang, **Mr. Hao Chen** Huaneng Clean Energy Research Institute, China
12:00-12:15	E017	A Flexible Control Strategy Model for Energy Storage System Shaohua Zhang, Rong Zhang, Xin Wei, Yunshan Wang, Zhi Cai, **Mr. Rong Kang** Xi'an FPA Energy Technology Co.,Ltd. China

12:15-12:30	E-205	Deep Reinforcement Learning Based Approach for Active Power SecurityCorrection Control of Power System **Ms. Yidi Wang**, Lixin Li, Yijun Yu, Xiaochen Ma, Zhi Cai, Meng Liu, Junci Tang China Electric Power Research Institute. China

Online Session 14

Time: 10:45-12:15(GMT+8) Monday, March 28, 2022

Zoom ID: 841 0048 1462

Topic: Mechatronics

Chair:

Notes:

- ✓ Please Sign in the conference rooms 10 minutes before the whole session starts.
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10:45-11:00	E1001	Design and Simulation of Permanent Magnet Brushless DC Motor for Small-sized load UAV **Mr. Chuanhui Zhu,** Congli Mei, Guoqin Zhang, Tao Peng, Wei Yao, Antai Han Zhejiang University of Water Resources and Electric Power, China
11:00-11:15	E155	Study on Transient Control Technology of Doubly-fed Wind Turbine Connected to VSC-HVDC **Dr. Yanqiu Bi**, Xueqin Wang, Yan Li, Dahai Zhang Global Energy Interconnection Group Limited Company, China
11:15-11:30	E113	Preventive Day-Ahead Schedule Coordinating Generators and Energy Storage **Ms. Ruihua Si,** Zuhao Zhong, Yuming Cheng, Yunfeng Wen, Peng Jia, Chuanjie Wang Hunan University, China
11:30-11:45	E116	Based on Vector Proportional Integral (VPI) Control of Brushless Doubly Fed Induction Generator under Load Imbalance Zhongsong Zhang, **Mr. Debin Zhang**, Jijun Ma; Honglin Lu, Yaqin Zhou, Zhenzhen Xie. Shanghai Institute of Space Power-Source(SISP), Shanghai
11:45-12:00	E181	Variable Magnet based Performance Improvement of PM-assisted Synchronous Reluctance Motor **Mr. Changhee Lee**, Fuat Kucuk Kyoto University of Advanced Science, Japan
12:00-12:15	E-702	Decomposed Unit Commitment of Integrated Electricity and Natural Gas System with Dynamic Gas Flow Considered **Mr. Xuewei Wu**, Zhe Chen, Jiakun Fang Aalborg University, Denmark

Online Session 15

Time: 13:30-15:30(GMT+8) Monday, March 28, 2022

Zoom ID: 891 2336 5574

Topic: High Voltage and Insulation Technology

Chair: Assoc. Prof. Hui Hou, Wuhan University of Technology, China

Notes:

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13:30-13:45	E063	A voltage sag prevention method for sensitive enterprises considering comprehensive benefits Can Wang, Zhihao Ning, Xiaoyuan Wang, Shifeng Liu, **Ms. Jing Wang** Southwest Jiaotong University, China
13:45-14:00	E1009	Fast assessment method of transmission lines switching overvoltage based on BP artificial neural network **Mr. Yu Xiaodong,** Zhou Kunpeng, Cai Defu, Liu Haiguang, Wan Li, Wang Tao State Grid Hubei Electric Power Research Institute, China
14:00-14:15	E152	A multi-dimensional evaluation method for voltage sag risk of regional grid sensitive enterprise Can Wang, Zhihao Ning, Xiaoyuan Wang, Xi Huang, **Dr. Bo Li** Southwest Jiaotong University, China
14:15-14:30	E142	Insulator Defect Detection Based on Improved Faster R-CNN Jinpeng Tang, **Mr. Jiang Wang**, Hailin Wang, Jiyi Wei, Yijian Wei, Mingsheng Qin. Hechi Power Supply Bureau of Guangxi Power Grid Co., Ltd., China
14:30-14:45	E103	A New Adaptive DC Voltage Droop Control for Hybrid Cascaded HVDC Transmission System Zhongjian Kang, **Mr.Zilin Zhang**, Shanshan Wang, Rui Yin China University of Petroleum (East China), China
14:45-15:00	E002	Numerical Simulation of Water Droplet Impact on Composite Insulator under DC Electric Field **Mr. Chao Liu,** Hui Hou Wuhan University of Technology, China

15:00-15:15	E1008	Analysis of excitation inrush current and secondary harmonic during 500kV AC field commissioning test of ±800kV Shan to Wu UHVDC **Mr. Yu Xiaodong,** Zhou Kunpeng, Cai Defu, Chen Rusi, Cao Kan, Li Yunfeng State Grid Hubei Electric Power Research Institute, China
15:15-15:30	E129	Analysis of XLPE Cable Buffer Layer Defects Localization based on Impedance Spectroscopy Xuefeng Zhao, **Ms. Lanqing Qu**, Haibao Mu, Xingyu Zou, Wei Duan, Lu Pu Fuzhou University, China

Online Session 16

Time: 13:30-15:30(GMT+8) Monday, March 28, 2022

Zoom ID: 816 5927 2794

Topic: Distribution Network and Distribution System Optimization

Chair: Xueqian Fu, China Agricultural University, China

Notes:

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13:30-13:45	E046	Distribution System Reliability Assessment considering Voltage Deviation and Sag from Consumer Side **Dr. Liyang Liu**, Zhichao Ren, Jun Wei, Chuan Long and Shengyong Ye, State Grid Sichuan Economic Research Institute, China
13:45-14:00	E1010	Intelligent Detection Scheme of Tripping-Closing Coil Resistance for Medium-Low Voltage Distribution circuit breaker Based on Intelligent Detection System **Mr. Min Zhang,** Jian Fang, Wenxiong Mo, Bai Huang, Jiaxing He, Xiang Lin Guangdong Power Grid Co., Ltd. Guangzhou Power Supply Bureau Guangzhou, China
14:00-14:15	E096	Optimization of the Tie Lines in Urban Distribution Network Based on Two-Tie Connection Mode **Mr. Huazhong Sun**, Zongxuan Li, Zhen Fang, Mingqiang Wang, Juan Cui State Grid Shandong Electric Power Company Weifang Power Supply Company, China
14:15-14:30	E105	Research on Probabilistic Load Flow Algorithm for Flexible Interconnected Distribution Network Guobang Ban, Yutao Xu, **Mr. Huan Cai**, Yunwen Yu, Huajun Zheng, Xufeng Yuan Guizhou University, China
14:30-14:45	E3009	Source-load-storage coordinated optimization dispatch for distribution networks considering source-load uncertainties **Mr. Jia Zhong**, Ke-Jun Li, Kaiqi Sun, Jie Liu, Xue Chang Shandong University, China

14:45-15:00	E141	The Study of Distributionally Robust Optimization for Integrated Electric-gas Distribution System with Demand Response Uncertainty **Ms. Yangyu Hu**, Shuai Huo, Fang Liu, Mingjie Yang, Yao Niu, Jie Zeng, Xiaoyang Tong Southwest Jiaotong University, China
15:00-15:15	E160	Resilience enhancement planning method for distribution systems based on key nodes identification Lei Liu, Xingwang Lu, Xiaoting Yang, Xiaoqiang Ma, **Ms. Jianchun Xu**, Qi Zhao Shandong University, China
15:15-15:30	E3006	Analysis of adjustable capacity of air conditioning load based on the power distribution area Min Wang, **Ms.Yuan Chen**, Zixuan Yu, Huilin Wang, Fanglin Zuo, Jian Zhou, Shanshan Shi Hohai University, China

Online Session 17

Time: 13:30-15:30(GMT+8) Monday, March 28, 2022

Zoom ID: 841 0048 1462

Topic: Electrical Equipment Control and System Model

Chair: Bowen Zhou, Northeastern University, China

Notes:

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13:30-13:45	E3001	The intrinsic reason of the limitation of Vth compensation range for internal compensation circuit in the AM-MiniLED pixel structure **Dr. Wenxue Huo,** Juncheng Xiao, Hang Zhou, Peking University Shenzhen Graduate, China
13:45-14:00	E169	Robust Flatness Controller for DC/DC Converter under Constant Power Load Conditions **Assoc. Prof. Ahmed Shahin,** Abdelhady Ghanem, Weihao Hu, Sayed Abulanwar Mansoura University, Eygpt
14:00-14:15	E070	Modeling and simulation analysis of transformer hot spot temperature based on multi physical field coupling calculation and temperature rise characteristics **Mrs. Xu Jing,** Liu Shuxin, LI Zhengwen, Wang Chao, Tang Junci Shenyang University of Technology, China
14:15-14:30	E039	Research on inrush current phase control technology of step up transformer in Hydropower Station Based on closing resistance **Mr. Ren Hongtao**, Jia Chaoyu HuaDong Engineering Corporation Limited, China
14:30-14:45	E061	Simulation Calculation and Analysis of Temperature Field of 35kV Station Transformer Based on Fluid-solid Coupling Method **Ms. Chong Jiali,** Wang Lei, Zhao Lei, Liu Tianyu Inner Mongolia Power Research Institute Branch, China
14:45-15:00	E107	Research and Implementation of Vector Control Strategy for Centrifugal Actuator **Dr. Mingliang Hu,** Wen Yan, Lu Zhang, Fangchun Yu AVIC Computing Research Institute, China

15:00-15:15	E144	A Ripple-free Capacitor-less Design With Unbalanced Operating Points for Input-parallel Output-series DAB Fed Single-phase VSI **Mr. Zhenchao Li**, Yan Zhang, Jinjun Liu Xi'an Jiaotong University, China
15:15-15:30	E179	A Transformer District Line Loss Calculation Method Based on Data Mining and Machine Learning Xiaowei Miao, Zhujian Ou, Ming Yang, Jianhua Yuan, Yue Cao, **Ms. Shiying Huang**, Wangchun Liu Shandong University, China

Online Session 18

Time: 15:45-17:45 (GMT+8) Monday March 28, 2022

Zoom ID: 891 2336 5574

Topic: Power Equipment Detection and Reliability

Chair: Ruiming Fang, Huaqiao University, China

Notes:

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15:45-16:00	E004	Fault Diagnosis of Secondary Equipment Based on Big Data of Smart Substation **Mr. Hengxuan Li** State Grid Hubei Electric Power Company, China
16:00-16:15	E030	Analysis on Influencing Factors of Repair Order of Power Supply Station based on Grey Correlation Analysis Jiyang Lu, Jun Ji, **Ms. Xiangwei Xu** Nanjing Jinzhi Electric Power Technology Co., Ltd, China
16:15-16:30	E026	Research of container security reinforcement multi-service APP deployment for new power system on substation **Mr. Xu Xin, Z**hang Yan, Hao Yueying, Jiang Yulei, Geng Mingzhi China Electric Power Research Institute Co. Ltd, China
16:30-16:45	E036	Study on Implementation Plan of International Standard Requirements for Substation Inspection Robot Test and Detection Technology Hao Hu, **Dr. Jun She**, Yongning Chi, Yan Li, Lili Xie, Ziliang Xu, Jiancheng Ye, Hongxi Yu Institute of Technology and International Standard, China
16:45-17:00	E056	Knowledge Guidance Based Work Ticket Intelligent Generation of Electric Power Equipment Inspection **Ms. Jiannan Xu,** Huifang Xu, Jingcheng Chen, Chunyu Deng, Yongping Xiong, Yan Qi China Electric Power Research Institute, China

17:00-17:15	E139	Research on Online Monitoring Technology of Disconnector based on IEC 61850 Model Improved **Dr. Ding Xuefeng,** Xia Gufeng State Grid Nantong Power Supply Company, China
17:15-17:30	E042	Evaluation and Improvement of Voltage Stability of the Paralleled Virtual Synchronous Generator and Current-Controlled VSC System **Mr. Huiqiang Sun**, Xinchun Lin, Songbai Chen, Dan Liu, Ping Xiong, Yiqun Kang Huazhong University of Science and Technology, China
17:30-17:45	E062	Voltage sag propagation model considering transformer operation parameters Yifan Song, Hongtao Li, **Ms. He Sun** Anhui University, China

Online Session 19

Time: 15:45-17:45 (GMT+8) Monday March 28, 2022

Zoom ID: 816 5927 2794

Topic: Power Grid Control and Condition Monitoring

Chair: Baohong Li, Sichuan University, China

Notes:

- ✓ Please Sign in the conference rooms 10 minutes before the whole session starts.
- ✓ Timing: a maximum of 15 minutes in total, including 2-3 minutes for Q&A.
- ✓ Certificate of Presentation will be sent to each presenter's email box after the conference.
- ✓ One Best Presentation will be selected from each parallel session and author of best presentation will be announced at the end of this session.

15:45-16:00	E041	Construction and Analysis of Cross-layer Aggregation Neural Network for AMI Intrusion Detection **Ms. Ning Wang,** Zhihui Liu, Ruizhe Yao, Li Zhang Dalian University of Technology, China
16:00-16:15	E084	A White-Box SM4 Implementation by Introducing Pseudo States Applied to Edge IoT Agents Weiwei Miao, **Mr. Chao Jin**, Zeng Zeng, Zhejing Bao, Xiaogang Wei, Rui Zhang Zhejiang University, China
16:15-16:30	E120	The control strategy for power CPS microgrid under network attack Di Zhang, Xutao Li, Lei Zhou, Hongqiang Li, **Dr. Hongtao Shi**, Feng Gao North Minzu University, China
16:30-16:45	E159	Optimal Sizing of Standalone Hybrid Microgrid Using Artificial Jellyfish Search Ashraf Aly, Eid Gouda, Mohamed Elsayes, Di Cao, Weihao Hu, Sayed Abulanwar, **Mr. Shihua Luo** University of Electronic Science and Technology of China, China
16:45-17:00	E137	An improved fault restoration strategy for distribution network power system **Ms. Mengyao Liu,** Chao Zhang Shandong University of Science and Technology, China
17:00-17:15	E178	Towards Optimal Topological Structure Entropy for Robustness of Smart Grid against Cascading Failures Quanming Zhang, Yiming Chen, **Mr.Xinan Hou**, Min Zhang, Jing Gou, Jiawei Yu, Xiaolong Yang University of Science and Technology Beijing, China

17:15-17:30	E3003	Research on Single-Phase Grounding Fault Types Identification of Distribution Network Based on CNN Zhang Hongtao, Zou Gang, Yin Haohan, Xie Qingyu, **Mr. Sun Yue** Chongqing University, China
17:30-17:45	E140	Lightweight man-machine architecture of large power grid regulation based on micro-service **Mr. Yan Zijian**, Jiang Zhengwei, Wang Liang, Ge Minhui Electric Power Research Institute Co., Ltd., China

Online Session 20

Time: 15:45-17:45 (GMT+8) Monday March 28, 2022

Zoom ID: 841 0048 1462

Topic: Power Supply System and Energy Storage Technology

Chair: Assoc. Prof. Hui Hou, Wuhan University of Technology, China

Notes:

- ✓ Please Sign in the conference rooms 10 minutes before the whole session starts.
- ✓ Timing: a maximum of 15 minutes in total, including 2-3 minutes for Q&A.
- ✓ Certificate of Presentation will be sent to each presenter's email box after the conference.
- ✓ One Best Presentation will be selected from each parallel session and author of best presentation will be announced at the end of this session.

15:45-16:00	E1002	A comprehensive power quality assessment method based on logarithmic correction for microgrid Shi Hongtao, **Mr. Su Gang**, Li Yifan, Zhou Jian, Zhang Jie, Feng Kun North Minzu University, China
16:00-16:15	E044	Power Quality Management Strategy for High-speed Railway Traction Power Supply System **Mr. Yongbin Shi**, Teng Li Beijing Jiaotong University, China
16:15-16:30	E132	Four-domain Control Strategy of Spacecraft Power Supply System **Mr. Ming Zhang**, Haijin Li, Chao Wang, Lijun Ma, Lei Dai, Lin Qiu Beijing Institute of Spacecraft System Engineering, China
16:30-16:45	E093	Research on Joint Operation of Wind and Solar Storage System Based on Genetic Algorithm Yanfei Zhang, Lei Zhang, Hui Wang, **Ms. Ruijun Qin** North China Electric Power University, China
16:45-17:00	E131	Optimal Scheduling of 5G Base Station Energy Storage Considering Wind and Solar Complementation Yangfan Peng, Yong Shi, **Mr. Li Junshuang**, Yan Hu Shanghai JiaoTong University,China
17:00-17:15	E003	Location and capacity method of electric vehicle charging facilities based on crisscross optimization algorithm **Mr. Xiaohua Chen**, Zhiping Wang, Shengyu Chen, Jiaying Li, Guorong Yang, Haiwen Xu, Yuwen Peng, HongLing Li Guangdong University of Technology, China

17:15-17:30	E1007	Integrated electric vehicle charging path planning considering traffic network and power grid Jiajie Hao, Hui Hou, Yubao Zhang, Yu Wang, Baike Cai, **Mr. Chao Liu** Wuhan University of Technology, China
17:30-17:45	E091	Coordinated Control Strategy for Improving Frequency Stability of Offshore Wind Farms Connected to the Grid Through MMC-HVDC Transmission Jianwei Chu, Yue Lv, **Ms. Yanan Xu**, Guoguang Du, Dong Sun, Peixu Yu. Northeast Electric Power University, China,

Onsite and Online Poster Session (Oral Flash)

Time: 17:00-18:00 (GMT+8) Saturday, March 26, 2022

Zoom ID: 891 2336 5574

Topic: Energy and Electrical Engineering

Chair:

Venue: 3rd Meeting Room (会议三厅)

Notes:

- ✓ For Onsite Attendees, please arrive at the conference rooms 10 minutes before the whole session starts.
- ✓ For Online Attendees, please Sign in the conference rooms 10 minutes before the whole session starts.
- ✓ Each Poster will have 5 mins for a brief introduction and Q&A
- ✓ Certificate of Presentation will be sent to each presenter's email box after the conference.
- ✓ One Best Presentation will be selected from each parallel session and author of best presentation will be announced at the end of this session.

17:00-17:05	E074	A Novel Ensemble Learning Scheme for Online Transient Stability Assessment Considering Feature Interdependency Xinwei Sun, Wei Wei, Zhen Chen, Bo Zhou, **Dr. Tingjian Liu**, Junyong Liu Sichuan University, China
17:05-17:10	E-201	Research and application of key technologies for real-time dispatching and control of multi-level power grid with adjustable load Quan Qing, Yongping Meng, **Mr. Jingchi Wu**, Song Xiao, Mingmei Zhang, Shu Zheng, Li He; Chunhui Li. Southwest Jiaotong University, China
17:10-17:15	E136	Research and Application of Current Output Type Additional Controller in Photovoltaic Grid-connected Power Generation System **Mr. Chang Ye**, Shaorong Wang, Jue Hou Huazhong University of Science and Technology, China
17:15-17:20	E029	Evaluation Method of Oil-paper Insulation Bushing Damp Type Based on Polarity Reversal **Mr. Huanmin Yao,** Haibao Mu, Haoxiang Zhao, Xuan Li, Daning Zhang and Guanjun Zhang Xi'an Jiaotong University, China

17:20-17:25	E035	Multi-objective Dynamic Reactive Power Optimization Based on OLTC and Reactive Power Compensation **Mr. Xiang Cai,** Qingjun Huang, Xiudong Zhou, Yuan Zhu, Shiyi Sun, Junwei Zhu State Key Laboratory of Disaster Prevention & Reduction for Power Grid Transmission and Distribution Equipment, China
17:25-17:30	E043	A Cable Breakage Defect Localization and Assessment Technique via Time-Frequency Domain Reflectometry with Gaussian Window **Mr. Xingyu Zou**, Haibao Mu, Haotian Zhang, Lanqing Qu, Guanjun Zhang Xi'an Jiaotong University,, China
17:30-17:35	E050	Co-phase power supply scheme based on MMC and Yd11 wiring **Mr. Yong Zhou**, Min'an Tang, Xiyuan XU Lanzhou Jiaotong University, China
17:35-17:40	E057	Comprehensive Evaluation of Integrated Port Energy System under the Target of Carbon Emission Peak and Carbon Neutrality **Mr. Tianli Song,** Mengyao Zhang, Su Wang, Yuchen Qi State Grid Shanghai Economic and Technological Research Institute, China
17:40-17:45	E090	Analysis and Treatment of Shunt Capacitance Defect of 750 kV Metal Oxide Arrester **Mr.LI Shan**, JIN Ming Xinjiang Electric Power research Institute, China
17:45-17:50	E125	New Energy Converter Control Method Based on the Droop of Hyperbolic Tangent Function Changzhou Yu, Haizhen Xu, Long Shen, **Ms. Siqi Huang**, Chun Liu, Meimei Sun, Xing Zhang. Hefei University, China,
17:50-17:55	E3008	Machine Learning-Based System for Managing Energy Efficiency of Public Buildings: An Approach towards Smart Cities Taiwo Ajagunsegun, Jian Li, **Prof. Olusola Bamisile**, Chinyere Ohakwe University of Electronic Science and Technology of China, China,
17:55-18:00	E134	Stability Study of Battery Simulator Based on Multisampling Technique **Mr. Changzhou Yu**, Kang Rong, Jiale Yan, Siqi Huang, Wenjie Cao, Lican He. Hefei University, China,

Listeners

Listener: Mr. Honglin Lu, Shanghai Institute of Space Power-Source(SISP), China

Listener: Mr. Jin Deng, Shanghai University of Electric Power,China

Listener: Mr. Yuxuan Zheng, UESTC, China

Listener: Mr. Zhenjie Cui, UESTC, China

Listener: Mr. Haoming Liu, UESTC, China

Listener: Mr. Xianpeng Xi, UESTC, China

Listener: Mr. Xinxiao Qin, UESTC, China

Listener: Mr. Yincheng Zhao, UESTC, China

Listener: Mr. Jiaxiang Hu, UESTC, China

Listener: Mr. Kang Xiong, UESTC, China

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