

## RPG 2019 Overview Programme

<b>Wednesday, 23 October 2019</b>	
14:00 – 17:00	Pre-event registration
<b>Thursday, 24 October 2019</b>	
08:00 -- 09:00	Registration
<b>Plenary Session (ALL DELEGATES)</b> Jing Heng Conference Hall	
<b>Session Host: Prof. Nengling TAI</b>	
09:00 -- 09:15	<b>Chair's welcome speech &amp; introduction</b> Prof. Nengling TAI, RPG 2019 Conference Chair , Vice Head of School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University, China
09:15 – 09:30	<b>Opening address from the Vice President of Shanghai Jiao Tong University</b> Prof. Junfa MAO, Shanghai Jiao Tong University, China
09:30 – 09:45	<b>Opening address from the Head of International Operations at IET</b> Mr. Ian Mercer, The Institution of Engineering and Technology (IET), UK
09:45 -- 09:55	<b>Group Photo</b>
<b>Session Host: Prof. David Infield, University of Strathclyde, UK</b>	
09:55 -- 10:20	<b>Keynote speech from Xiaoxin ZHOU, China Electric Power Research Institute, China</b> <i>Speech Title: Next Generation of Power System and Energy Internet</i>
10:20 -- 10:40	<b>Keynote speech from Prof. Yilu LIU, Oak Ridge National Laboratory, CURENT Engineering Research Centre, USA</b> <i>Speech Title: Grid Edge Time Synchronous Measurement &amp; Applications</i>
10:40 – 11:00	<b>Refreshment and poster session</b>
11:00 --11:20	<b>Keynote speech from Prof. Chanan Singh, Texas A&amp;M University, USA</b> <i>Speech Title: Integrating Renewables and Maintaining Grid Reliability</i>
11:20 -- 11:40	<b>Keynote speech from Prof. Yunwei (Ryan) LI, University of Alberta, Canada</b> <i>Speech Title: More Renewable Electric Grids Enabled by Power Electronics Technologies</i>
11:40 --12:00	<b>Keynote speech from Professor Liuqing YANG, Colorado State University, USA</b> <i>Speech Title: IoT for Smart Grid Energy Management</i>
12:00 – 12:20	<b>Keynote speech from Professor Vassilios G. Agelidis, Technical University of Denmark, Denmark</b> <i>Speech Title: Utility power electronics: from energy converters to utility sensors</i>
12:20 – 12:40	<b>Keynote Speech from Dr. Yi ZHANG, Chief Technology Officer &amp; Vice President of Research and Development, RTDS Technologies Inc.</b> <i>Speech Title: Looking towards Future Real Time Digital Simulation Technology</i>
12:40 --13:30	<b>Lunch &amp; Poster Session (Day 1 poster please refer to Poster programme)</b>

## Oral Presentation Sessions

Location Time	Jingde Room 2 <sup>nd</sup> Floor	Jingqian Room 2 <sup>nd</sup> floor	Jingheng-2 Room 3 <sup>rd</sup> floor	Room A 3 <sup>rd</sup> floor	Room D 3 <sup>rd</sup> floor
13:30--15:00	<p><b>Session A1: Wind Technology</b></p> <p>Session chair: Prof. Yongqian LIU North China Electric Power University, China</p>	<p><b>Session B1: PV system technology</b></p> <p>Session chair: Prof. Xiaodong ZHENG, Shanghai Jiao Tong University, China</p>	<p><b>Session F1a: Planning, policy and marketing options</b></p> <p>Session chair: Prof. Ciwei GAO, Southeast University, China</p>	<p><b>Session G1*: System Operation and protection -- <i>Fault Analysis and Protection Methods of Power Electronized Power Systems</i></b></p> <p>Session chair: Prof. Jiabing HU, Huazhong University of Science and Technology, China</p>	<p><b>Session E1*: Grid Integration -- DC Generation and DC Integration of New Energy</b></p> <p>Session chair: Prof. Miao ZHU, Shanghai Jiao Tong University, China</p>
15:00--15:30	Poster Session and Refreshments (Day 1 poster please refer to Poster Programme)				
15:30--17:00	<p><b>Session A1 Wind Technology</b></p> <p>Session chair: Prof. Yongqian LIU North China Electric Power University, China</p>	<p><b>Session B1: PV system technology</b></p> <p>Session chair: Prof. Xiaodong ZHENG, Shanghai Jiao Tong University, China</p>	<p><b>Session F1b: Planning, policy and marketing options</b></p> <p>Session chair: Prof. Donghan FENG, Shanghai Jiao Tong University, China</p>	<p><b>Session G1: System Operation and protection</b></p> <p>Session chair: Prof. Jiabing HU, Huazhong University of Science and Technology, China</p>	<p><b>Session E1: Grid Integration</b></p> <p>Session chair: Prof. Miao ZHU, Shanghai Jiao Tong University, China</p>
17:00 – 18:00	Poster Presentation (Day 1 poster please refer to Poster Programme)				
<p><b>Drink Reception (ALL DELEGATES)</b>  <b>Jingheng-2 Conference Hall, 3<sup>rd</sup> floor 18:00 – 19:30</b></p> <p>Host: Professor Xiaodong ZHENG &amp; Professor Miao ZHU</p> <ul style="list-style-type: none"> <li>• Welcome speeches</li> <li>• Award ceremony</li> <li>• Networking</li> </ul>					

## Friday, 25 October 2019

08:00--09:00	Registration				
<b>Location</b> <b>Time</b>	<b>Jingde Room</b> <b>2<sup>nd</sup> Floor</b>	<b>Jingqian Room</b> <b>2<sup>nd</sup> floor</b>	<b>Jingheng-2 Room</b> <b>3<sup>rd</sup> floor</b>	<b>Room A</b> <b>3<sup>rd</sup> floor</b>	<b>Room D</b> <b>3<sup>rd</sup> floor</b>
09:00--10:30	<b>Session A2a: Wind Technology</b>  Session chair: Prof. David INFIELD, University of Strathclyde, UK	<b>Session B2*: PV system technology</b> <i>-- Reliability, Monitoring and Fault Diagnostics of PV Generation System</i>  Session chair: Prof. Mingyao MA, Hefei University of Technology, China	<b>Session F2*: Planning, policy and marketing options</b> -- <i>electricity markets facilitating renewable energy integration</i>  Session chair: Prof. Ming YANG, Shandong University, China	<b>Session G2*: System Operation and protection</b> -- <i>Sensing, Fault diagnosis and Fault tolerance for Renewable Energy System</i>  Session chair: Prof. Yingning QIU, Nanjing University of Science and Technology, China	<b>Session E2*: Grid Integration</b> <i>-- Sub- and Super-synchronous Control Interactions in RPG-integrated Power Systems</i>  Session chair: Prof. Xiaorong XIE, Tsinghua University, China
10:30--11:00	Poster Session and Refreshments (Day 2 poster please refer to Appendix II )				
11:00--12:30	<b>Session A2a: Wind Technology</b>  Session chair: Prof. David INFIELD, University of Strathclyde, UK	<b>Session C2*: Other Renewable Energy Sources</b> -- <i>Integration and Application Innovation of Energy Storage Systems</i>  Session chair: Prof. Wentao Huang, Shanghai Jiao Tong University, China	<b>Session D2*: EnergyInternet and SmartCity</b> -- <i>Harbor &amp; off-shore renewable energy integration and green maritime transportation</i>  Session Chair: Prof. Sidun FANG, Nanyang Technological University, Singapore	<b>Session G2a: System Operation and protection</b>  Session chair: Prof. Yingning QIU, Nanjing University of Science and Technology, China	<b>Session E2a: Grid Integration</b>  Session chair: Prof. Xiaorong XIE, singhua University, China
12:30--13:30	Poster Session and Lunch (Day 2 poster please refer to Appendix II )				
13:30--15:00	<b>Session A2b: Wind Technology</b>  Session chair: Prof. Meng KE, The University of New South Wales, Australia	<b>Session C2: Other Renewable Energy Sources</b>  Session chair: Prof. Bin WANG, Tsinghua University, China	<b>Session D2: Energy Internet and Smart City</b>  Session chair: Prof. Bowen ZHOU, Northeastern University, China	<b>Session G2b: System Operation and protection</b>  Session chair: Dr. Zhibing WANG, China Electric Power Research Institute (CEPRI), China	<b>Session E2b: Grid Integration</b>  Session chair: Prof. Hua GENG, Tsinghua University, China

15:00--15:30	Poster Session and Refreshments (Day 2 poster please refer to Appendix II )				
15:30--17:00	<b>Session A2b: Wind Technology</b>  Session chair: Prof. Meng KE, The University of New South Wales, Australia	<b>Session C2: Other Renewable Energy Sources</b>  Session chair: Prof. Bin WANG, Tsinghua University, China	<b>Session D2: Energy Internet and Smart City</b>  Session chair: Prof. Bowen ZHOU, Northeastern University, China	<b>Session G2b: System Operation and protection</b>  Session chair: Dr. Zhibing WANG, China Electric Power Research Institute (CEPRI), China	<b>Session E2b: Grid Integration</b>  Session chair: Prof. Hua GENG, Tsinghua University, China
<b>Saturday, 26 October 2019</b>					
<p><b>Technical Visit</b></p> <ol style="list-style-type: none"> <li>1. State Grid Shanghai Electric Power Company (control center)</li> <li>2. 1000KV High Voltage Liantang</li> </ol>					

# Oral Presentation

13:30 – 19:30 | 24 October 2019

## Session A1 Wind Technology

13:30 – 17:00 Session A1 Chair: Prof. Yongqian LIU, North China Electric Power University, China

13:30 --- 15:00 **A1.1 (0002)**

Coordinated voltage and reactive power control scheme of the HVAC meshed offshore grid of the offshore wind power plant at Kriegers Flak  
Qiuwei Wu, Tibor Takarics, Vladislav Akhmatov

**A1.2 (0018)**

Analysis of Interaction Between Wind Turbines in Wind Farm Based on Small Signal Model of Doubly-Fed Wind Turbine  
Yan Li

**A1.3 (0066)**

GREEDY STRATEGY AND SELF-ADAPTIVE CROSSOVER OPERATOR BASED MONARCH BUTTERFLY OPTIMIZATION FOR SIMULTANEOUS INTEGRATION OF RENEWABLES AND BATTERY ENERGY STORAGE IN DISTRIBUTION SYSTEMS  
Pushpendra Singh, Balvinder Singh, S.K. Bishnoi, N.K. Meena, Jin Yang

**A1.4 (0073)**

STUDY ON PLL PARAMETER SECURITY REGION BASED ON GERSCHGORIN DISC THEOREM AND IMPEDANCE METHOD  
Y Ren, L Chen, X Wang, Y Min, G Li, L Wang, Y Zhang, L Yin

**A1.5 (0080)**

Power Control Performance Evaluation of Wind Turbine Based on a Hardware-in-the-loop Simulation Platform  
Fenglin Miao, Qing Li, Jing He, Jinping Zhang

15:00 --- 15:30 **Poster Session and Refreshments**

15:30 --- 17:00 **A1.6 (0134)**

Wind Turbine Mechanical Load Estimation Based on Adaptive Network-based Fuzzy Inference System  
R Bi, S Qin, X Ma, D Fu, W Wang

**A1.7 (0136)**

A Control Strategy for Battery Energy Storage Smoothing Short-term Wind Power Fluctuation Based on ANN  
Zhan Shu, Xiaotao Peng, Yong Zhao, Siyu Huang, Zheng Zhang, Huaqu Li

**A1.8 (0142)**

INTEROPERABILITY ASSESSMENT OF MMC AND DRU CONNECTED OFFSHORE WINDFARMS IN MESHED MULTI-TERMINAL DC GRIDS  
Lei Shi, Grain Adam, Rui Li, Lie Xu

**A1.9 (0166)**

Nonlinearity Assessment and Model Reduction Based on Gap Metric for Wind Turbine Predictive Control  
H Meng, X Yang, D Liu, Z Qiu, B Zhou, G Lv

**A1.10 (0182)**

Design and Application of RTDS & GH Bladed Co-simulation Research Platform for DFIG Wind Turbine  
Haoshu Shao, Xu Cai, Gang Shi, Xiang Gao, Yao Qin, Yunfeng Cao, Jianwen Zhang, Fangquan Rao

**A1.11 (0195)**

Study on fault process division of wind turbine electrical model validation  
Jianfang Tang, Qing Li, Ziyu Chen, Jing He

**18:00 --- 19:30 Drink Reception & RPG 2019 Best Conference Paper Award (Jingheng Ballroom)****Session B1 PV System Technology**

13:30 – 17:00 Session B1 chair: Prof. Xiaodong ZHENG, Shanghai Jiao Tong University, China

**13:30 --- 15:00 B1.1 (0023)**

Model of long-term yield evaluation for PV station  
Yinghua Dong, Hongtao Li, Junjun Zhang, Fubao Wu, Mingchang Ding

**B1.2 (0044)**

Short-term Photovoltaic Power Forecasting Method Based on K-means Algorithm and Spiking Neural Networks  
Biyun Chen, Hongbin Li, Kunlun Han

**B1.3 (0492)**

A Method for Mitigating Subsynchronous Oscillation Risk Based on a Novel Control Strategy of VSC  
Wei He, Ao Li, Xiaoming Yuan, Jianqin Liu

**B1.4 (0502)**

Emergency Control Strategy of PV for Suppressing Transient Overvoltage Peak in LCC-HVDC Infeed Power System  
Boliang Lou, Longfei Wang, Rui Zhang, Wen Hua, Jiabing Hu

**B1.5 (0532)**

Arc Fault Detection and Localization in Photovoltaic Systems Based on Arc Signatures in Low Impedance Paths and Its Path Topology  
X M Jiang, J Y Li, Y S Li, Y Li, R B An, Y Hao

**B1.6 (0555)**

Amplitude-phase Admittance Modelling and Analysis for a Grid-Connected Converter System  
L Xu, M Sun, X Song, C Wang, H Xin

**15:00 --- 15:30 Poster Session and Refreshments****15:30 --- 17:00 B1.7 (0622)**

A SPWM Algorithm with Symmetrical Shoot-Through States for Z/Quasi-Z Source Inverters  
Xiang-lin Wei, Miao Zhu, Han Wang, Xiu-yi Li, Wei Chen, Su-rong Huang

**B1.8 (0666)**

Sequence Impedance Modeling of Droop-controlled Inverter  
You Hu, Jiajun Wang, Bin Liu, Zhen Li, Xiangdong Liu

**B1.9 (0684)**

An Improved BOOST Dual-Loop Control for Improving the MPPT Efficiency in Photovoltaic Systems  
Guangchen Li, Rende Zhao, Jinkui He, Hailiang Xu, QingZeng Yan

**B1.10 (0735)**

Application of Bayesian Regression method in performance assessment of PV modules  
Jing-Yi Wang, Zheng Qian, Jing-Yue Wang

**B1.11 (0789)**

Fuzzy Control Based Power Flow Control Strategy of EV DC Fast Charging Station Including Distributed PV Generation and Hybrid Energy Storage Systems  
Y Liu, Q Wang, F Wang, J X Deng, S N Yan, C Liu

**B1.12 (0857)**

Multi-objective optimization of DC-link capacitor bank for PV system considering parasitic parameters of individual capacitor  
Guorong Zhu, Haoran Wang, Cunzhong Li, Zhangliang Li, Huai Wang

**18:00 --- 19:30 Drink Reception & RPG 2019 Best Conference Paper Award (Jingheng Ballroom)****Session F1a/F1b: Planning, policy and marketing options**

13:30 – 15:00 Session F1a chair: Prof. Ciwei GAO, Southeast University

15:30 – 17:00 Session F1b chair: Prof. Donghan FENG, Shanghai Jiao Tong University, China

**13:30 --- 15:00 F1a.1(0074)**

Multi-objective Distribution Network Reconfiguration with DG Integration Using Improved Fireworks Algorithm  
Zhihang Zhou, Libao Shi, Xiangyu Xu, Yixin Ni

**F1a.2 (0102)**

Factors affecting for consumer attractiveness towards net metered solar PV technology in Sri Lanka.  
M A S Kumara, Indra Mahakalanda

**F1a.3 (0111)**

Design of Renewable Energy Certificates market mechanism under the framework of China's Renewable Portfolio Standards  
XF Lin, DH Feng, JN Zeng, Y Zhou, C Fang

**F1a.4 (0114)**

Modelling and Operation Optimization of Electricity-Gas-Heat Integrated Energy System Considering Demand Response and Wind Penetration  
X Zhao, Y Zhou, J Yun, P Zhang, Z Yan, D Feng

**F1a.5 (0275)**

Research on HVAC's Operation Strategy for Frequency Regulation under Integrated Coordination Control  
J L Yang, S S Ma, M X Guo, H Q Wang, T Yu, C Xiong

**F1a.6 (0294)**

Confidence Interval Based Distributionally Robust Real-Time Dispatch Considering Wind Power Uncertainty  
Peng Li, Ming Yang, Jiajun Yang, Pingjing Du, Fangqing Yan, Yi Zhu

**F1a.7 (0298)**

A REAL-TIME SPINNING RESERVE ALLOCATION METHOD CONSIDERING FORECAST ERRORS AND CONTINGENCIES  
F Wu, D H Feng, Y Zhou, C Fang

**15:00 --- 15:30 Poster Session and Refreshments****15:30 --- 17:00 F1b.1 (0339)**

A comprehensive decision-making method for coordinated transmission and distribution network planning  
Q W Zheng, J Liu, D J Yang, X Z Xue, J K Fang, W Yao, X M Ai

**F1b. 2(0459)**

Optimal Decision Making Model of Battery Energy Storage-Assisted Electric Vehicle Charging Station Considering Incentive Demand Response  
B Upadhaya, D Feng, Y Zhou, Q Gui, X Zhao, D Wu

**F1b.3 (0564)**

Stackelberg game based fast charging service fee price model in consideration of electric vehicles' promotion  
Y W Shi, D H Zhang, Y Zhou, D H Feng, Y T Chen, D Wu

**F1b.4 (0707)**

Influence of Dead Band of Turbine Governors on Ultra-Low-Frequency Oscillation in Hydro-Dominant Power System  
Ruopu Yang, Yiping Chen, Chongtao Li, Yong Zhang, Zhuoyao Tang, Jiyu Huang, Haoran Diao

**F1b.5 (0709)**

Research on HVDC Frequency Limit Control to Improve Frequency Restoration in Multi-HVDC Asynchronous System  
Jiyu Huang, Yiping Chen, Qin Gao, Yong Zhang, Ruopu Yang, Rongzhao Yang, Haoran Diao

**F1b.6 (0741)**

Renewable energy resources and technologies applicable to Sri Lanka.  
W Fernando, N Gupta, O Suheyl, G Kamyab

**F1b.7 (0807)**

Forced Clearing and its Pricing in Renewable Energy Markets  
D Karki, JN Zeng, XF Lin, C Liu, DH Feng

**18:00 --- 19:30 Drink Reception & RPG 2019 Best Conference Paper Award (Jingheng Ballroom)****Session G1\*/G1 System Operation and protection -- Fault Analysis and Protection Methods of Power Electronized Power Systems**

13:30 – 17:00 Session G1\*/G1 Chair: Prof. Jiabing HU, Huazhong University of Science and Technology

**13:30 --- 15:00 G1\*.1 (0065)**

ANALYSIS OF TRAVELING WAVE FRONT AND ITS APPLICATION IN FAULT LOCATION  
Chenhao Zhang, Guobing Song, Ting Wang

**G1\*.2 (0071)**

Voltage-frequency Coupled Transient Instability Analysis of The Weak Grid-Connected DFIG-based Wind Plant during LVRT  
J X Pei, J Yao, P Sun, Y Liu

**G1\*.3 (0315)**

Overview of Adaptive Reclosing Technique and the Challenge Faced in AC/DC Hybrid Power Grid.  
X Jia, B Wang, B Yu, M Xie, C.C Dai, X.P Cheng, D Wang, X.Z Dong

**G1\*.4 (0365)**

CCF Early Warning Method of LCC-HVDC based on XGBoost Algorithm  
Zhizhong Li, Bin Wang, Haigang Wang, Bin Yu, Min Xie, Shi Chen, Xinzhou Dong

**G1\*.5 (0474)**

Impact of DFIG-based Wind Turbine's Fault Current on Distance Relay during Symmetrical Faults  
Yuanzhu Chang, Jiabing Hu, Xing Liu, Guobing Song



**G1\*.6 (0680)**

General Model and Parameter Tuning of Doubly-fed Wind Turbines under Asymmetric Fault of Power Grid  
H Y Tang, X W Xu, Y D Jin, J Z Hu, Y Li

**15:00 --- 15:30 Poster Session and Refreshments****15:30 --- 17:00 G1.1 (0009)**

Research on On-line Monitoring Fault Diagnosis System of GIS UHF Partial Discharge  
Yifa Wag, Jinlong Gong, Qihua Song, Zhaoqiang Wang

**G1.2 (0037)**

Angle of Current Waveform Based Protection for DC Distribution System  
Congbo Wang, Yi Qiang, Ke Jia, Tao Feng, Wei Li, Bohan Liu

**G1.3 (0052)**

State evaluation method and correction of oil-immersed transformer in the renewable power grid based on big data analysis  
Jian Guo, Hongshun Liu, Xinghua Liu, peng Gao, Kecun Han, xuebin Lv, Chao yang, tongping Xie, Yang Yu, Peng Sun

**G1.4 (0059)**

Frequency enhancement of grid-forming inverters under low-SCR weak grid.  
Y Li, K Meng, Z Y Dong

**G1.5 (0103)**

Interharmonics Current Mitigation using DC-APF for High Power Extremely Low Frequency Transmission System  
Qing LIU, Ming ZHA, Zhiqing LUO, Hao MENG, Bingyang LUO, Xiangtian Deng, Guorong ZHU

**G1.6 (0119)**

High Impedance Fault Detection in Distribution Network Using Convolutional Neural Network based on Distribution-level PMU Data  
Y Zhang, X Wang, Y Luo, J He, B Hua, Q Xu

**18:00 --- 19:30 Drink Reception & RPG 2019 Best Conference Paper Award (Jingheng Ballroom)****Session E1\*/E1 Grid Integration -- DC Generation and DC Integration of New Energy**

13:30 – 17:00 Session E1\*/E1 chair: Prof. Miao ZHU, Shanghai Jiao Tong University, China

**13:30 --- 15:00 E1\*.1 (0540)**

Decentralized Unified Control Strategy for Medium and Low Voltage DC Distribution Power System  
P P Pan, W Chen, H Mu

**E1\*.2 (0543)**

A Stability Criterion for DC Distribution Power System with Multi-Voltage Levels  
P P Pan, W Chen, H Mu, L C Shu

**E1\*.3 (0734)**

Application of MMC Based on State Observer in DC Integration of Renewable Energy  
WJ Wang, LJ Hang, J Qiu, H Lu, PL Zeng

**E1\*.4 (0758)**

Comparison analysis of Local Stability Criteria for the DC Distribution Power System based on Impedance and Admittance  
Q Huang, Y Liu, Y B Yuan, X Y Si, P P Pan

**E1\*.5 (0779)**

Coordinated Start-up Strategy of the Converters in Multi-stage DC PV Power Collection System with Unidirectional Power Flow Characteristic  
Hao Hu, Miao Zhu, Xiuyi Li, Xu Cai

**E1\*.6 (0834)**

Modular Modelling Method for DC Transformer with Multiple Inputs and Multiple Outputs  
Xiuting Rong, Xufeng Li, Hui Zhang, Jianhua Wang, Liuzhu Zhu, Jing Ma

**E1\*.7 (0861)**

Design of Control and Protection System for Medium-low Voltage Flexible DC Distribution Network  
Yuning Lu, Lin Su, Dong Yuan, Anxin Yan, Ke Jiang

**15:00 --- 15:30 Poster Session and Refreshments****15:30 --- 17:00 E1.8 (0035)**

Optimal Allocation of SOPs in Distribution Networks Based on Candidate Location Selection Strategy  
Pengwei Cong, Zechun Hu, Wei Tang, Chengwei Lou

**E1.9 (0072)**

Single-Phase-to-Ground Fault Diagnosis Method based on Waveform Features and Association Rule Algorithm  
Linlin Zhang, Kai Xu, Yunbo Wang, Fang Shi, Shuozheng Liu

**E1.10 (0076)**

A Multi-criteria Dynamic Reactive Power Optimal Allocation Method Based on the Characteristics of Weak Sending-end System  
Zimo Xiang, Gengyin Li, Xu Zhu, Ming Zhou, Haiqiong Yi, Zengqiang Zhang, Chaoshan Xin

**E1.11 (0168)**

Analysis and Simulation of New DC Power Grids for Large-scale Clean Energy Integration and Transmission  
R H Jiao, J Ding, J W Ren, J N Lv, X P Chen

**E1.12 (0242)**

Robust Load Frequency Control and Integration of Electric Vehicles and Renewable Energy in the Grid.  
MUSA KHAN, Haishun Sun, Yingmeng Xiang, Di Shi, Yuling Wang

**E1.13 (0281)**

Harmonic state space impedance model of MMC considering internal impedance of AC and DC Grid  
S Zhang, B Li, Z Xu, D Xu

**18:00 --- 19:30 Drink Reception & RPG 2019 Best Conference Paper Award (Jingheng Ballroom)**

# Oral Presentation

**09:00 – 12:30 | 25 October 2019**

## Session A2: Wind Technology

09:00 – 12:30 Session A2a chair: Prof. David INFIELD, University of Strathclyde, UK

13:30 – 17:00 Session A2b chair: Prof. Meng KE, The University of New South Wales, Australia

### 09:00 --- 10:30 **A2a.1 (0197)**

Study on the impact of communication network on reactive power control in wind farm  
Chunyan Li, Qing Li, Jinping Zhang, Fenglin Miao

### **A2a.2 (0201)**

Sub-synchronous oscillation(SSO) analysis of direct-driven permanent magnet synchronous generators(D-PMSG)considering influence of phase-locked loop(PLL)  
Zhang xiaoyu, Li yan, Tang Haiyan

### **A2a.3 (0205)**

Modeling and Simulation of Virtual Synchronous Generator for DFIG wind turbine generator  
Q F Zhu, Z Y Chen, S H Feng, Y F Wang, B W Zhang, W L Li

### **A2a.4 (0236)**

Multi-objective LPV Control of Wind Energy Conversion System under Wide-scale Operating Conditions  
Chenzhi Qu, Zhongwei Lin, Zhen Xie, Yilin Li, Shangang Zhang, Xiongwei Li, Zhenqing Duan

### **A2a.5 (0252)**

Optimization of active power control strategy for wind farm  
Yi Fan, Jinping Zhang, Qing Li, Mei Zhang, Shunlai Wang

### **A2a.6 (0269)**

Wind Turbine Wake Simulation Based on Improved Actuator Disk Considering Nacelle and Tower  
Ning Li, Yongqian Liu, Hao Zhao, Ling Yuan, Li Li, Shuang Han, Hang Meng

### **A2a.7 (0284)**

Analysis of Low Harmonic Windings for High Speed Permanent Magnet Machines  
Shuaijun Chu, Deliang Liang, Shaofeng Jia, Yibin Liu, Yang Liang

### **10:30 --- 11:00 Poster Session and Refreshment**

### 11:00 --- 12:30 **A2a.8 (0287)**

Study on Krogstad wind tunnel experiment by using actuator line model considering nacelle effect  
Li Li, Hang Meng, Shuang Han, Ling Yuan, Yunjia Yang, Yongqian Liu

### **A2a.9 (0297)**

Evaluation Model of Power Generation Performance for Wind Turbine Based on Entropy Weight Method and Contingency Theory  
Yongqian Liu, Hongjun Wang, Zixin Chen, Shuang Han, Li Li, Jie Yan

### **A2a.10 (0308)**

Simulation Research of Wind Turbine Frequency Modulation Based on Different Wind Power Penetration Levels  
X W Xu, L Sun, N An, F Li, L N Su, X H Qin

**A2a.11 (0322)**

Impacts of DFIG-Based Wind Turbines on Damping of Power System Oscillations Considering Turbine Control  
Xiaojie Zhang, Wei He, Jiabing Hu, Longfei Wang

**A2a.12 (0356)**

The Evaluation of Wind Power Time Series Multi-scale Modeling Methods  
Y J Zhuo, L Guan, X S Zhan, B R Zhou, Y J Yan

**A2a.13 (0391)**

A Novel Two-stage Model Predictive Control for Wind Power Smoothing Based on HESS  
T T Guo, Y B Liu, Y Xiang, J Y Liu

**12:30 --- 13:30 Poster Session and Lunch****13:30 --- 15:00 A2b.1 (0463)**

Combination Forecasting Method of Short-term Power for Dispersed Wind Farm  
S Yan, L F Yan, Z T Zhao, Z H Jiang, J Y Zhou

**A2b.2 (0508)**

An Adjustable Robust Optimal Dispatch Method for Microgrids Considering Uncertainty Distribution of Wind Power  
Zhanpeng Chen, Wentao Huang, Zhengyu Chen, Nengling Tai, Yan Hu, Wenjun Ruan

**A2b.3 (0528)**

Research on collaborative frequency regulation control strategy of wind farm based on decentralized exit  
Y H Ren, P Song, X S Wang, R F Shi

**A2b.4 (0642)**

New Generic Model of Wind Turbine Voltage Ride-Through for Large-Scale Power System Studies  
X W Xu, N An, F Li, L Sun, H Y Tang, X L Chen

**A2b.5 (0647)**

Fault warning of pitch system of wind turbine based on kernel density estimation  
X L Yang, M Yang, X J Zeng, Y Zhu, Y Zhou

**A2b.6 (0667)**

Robust approximation models for predictive control of variable pitch wind power drivetrain  
N Kayedpour, A E Samani, J D M De Kooning, L Vandeveld, G Crevecoeur

**15:00 --- 15:30 Poster Session and Refreshments****15:30 --- 17:00 A2b.7 (0681)**

An LSTM-Attention Wind Power Prediction Method Considering Multiple Factors  
Xin Wang, Zheng Li, Jianwen Zhang, Haichun Liu, Caiming Qiu, Xu Cai

**A2b.8 (0720)**

Model Predictive Power Control of Brushless Doubly Fed Twin Stator Induction Generator for Grid Synchronization and Power Generation  
Xinchi Wei, Chen Fang, Jinsong Liu, Shu Liu, Ming Cheng

**A2b.9 (0732)**

Double-Sided Ring Topology for Offshore Wind Farm Collector System Layout: A Multi-Cable Application  
T J Zuo, Y Zhang, K Meng

**A2b.10 (0823)**

Wind Turbine Failure Detection Based on SCADA Data and Data Mining Method  
Siyu Tao, Zheng Qian, Yan Pei, Anqi Wang, Fanghong Zhang

**A2b.11 (0840)**

A Low-Cost Power-taking Scheme for Self-starting of Unidirectional Diode-Rectified DC Wind Turbines with Medium-Voltage Direct Current Transmission  
Yu Zhang, Shijun Liu, Jing Lyu, Zhiqian Yang, Zhanlong Li, Xu Cai

**A2b.12 (0867)**

DOUBLE INTEGRAL SLIDING SURFACE BASED INTELLIGENT PROPORTIONAL INTEGRAL CONTROL FOR STANDALONE WIND ENERGY CONVERSION SYSTEM  
Anjana Jain, R Saravanakumar

**Session B2\* PV System Technology**

-- Reliability, Monitoring and Fault Diagnostics of PV Generation System

09:00 – 10:30 Session B2\* chair: Prof. Mingyao Ma, Hefei University of Technology, China

09:00 --- 10:30 **B2\*.1 (0124)**

Monitoring Bond Wire Fatigue Based on Modelling of IGBT Module On-State Voltage Drop  
Yu Luo, Fei Wang, Xinyi Shu, Lijun Zhang, Xiaoqing Quan

**B2\*.2 (0226)**

Risk Assessment of Cascading Failure in Power Grid Based on Brittleness Theory of Complex System and Entropy Theory under Geomagnetic Storm Conditions  
xiaoning kang, yagang zhang, xinyue zhang, yini xu, xiaoyu li, yanlei yuan

**B2\*.3 (0413)**

Design of General Framework for Multi-fault Diagnosis Based on Photovoltaic Grid-Connected Inverter System  
F Ling, M Y Ma, Y R Sun, H Y Long, F Li

**B2\*.4 (0665)**

A Health Diagnosis Method for PV Module Based on Neural Network  
Siyuan Lu, Fei Wang, Lintao Ren, Wenhao Zhu

**B2\*.5 (0698)**

Whole Stability Margin of Phase Lead Filter Design in Repetitive Control for Voltage Harmonic Mitigation of Current Source Inverter  
Liu Tong, Chen alian, Liu Xi

**10:30 --- 11:00 Poster Session and Refreshment****Session C2\* Other Renewable Energy Sources**

-- Integration and Application Innovation of Energy Storage Systems

11:00 – 12:30 Session C2\* chair: Prof. Wentao Huang, Shanghai Jiao Tong University, China

11:00 --- 12:30 **C2\*.1 (0199)**

Reinforcement learning driven self-optimizing operation for distributed electrical storage system  
Mingming Shao, Youbo Liu, Kunyu Zuo, Xiaodi Wang, Jingting Chen, Junyong Liu

**C2\*.2 (0204)**

Comparison of Modulation and Power Control between Modular Multilevel Converter based Large Scale Battery Energy Storage System and MMC-HVDC  
Salman Ali, Kai Tian, Zhong Huang, Zhibin Ling

**C2\*. 3 (0225)**

MODELING AND ANALYSIS OF OPERATION BOUNDARY FOR CASCADED H-BRIDGE ENERGY STORAGE SYSTEM WITH INNER PHASE RAPID STATE OF CHARGE BALANCING

Yunjun Ling, Kai Tian, Lin Zhu, Xuguang Li

**C2\*.4 (0346)**

Analysis and Comparison of Power Quality and Interphase Circulation for One-stage and Two-stage Modular Battery Energy Storage System

Z Huang, K Tian, S Ali, Z.B Ling

**C2\*.5 (0455)**

Study on Reactive Voltage Regulation and Optimal Control Strategy of Photovoltaic Power Station Considering Energy Storage System

chunhui qu, wenwen sun, yanxia sun, wannian qi, guoqing he, jiatian gan

**C2\*.6 (0598)**

Resilient active power and virtual inertia coordinated control for multiple distributed energy storage units

W Wei, L Tang, T W Zheng, C Liu, L B Jiang, S W Mei

**12:30 --- 13:30 Poster Session and Lunch****Session C2: Other Renewable Energy Sources**

13:30 -- 17:00 Session C2 chair: Prof. Bin WANG, Tsinghua University, China

**13:30 --- 15:00 C2.1 (0021)**

Influence of Circuit Breaker Features on Switching Overvoltage of 35kV Shunt Reactor on No-load Busbar——II. Onsite Testing and Comparison

Yiming ZHENG, Chen LI, Mianzhi WU, Zemin WEI, Chunyan GONG, Xiang SUN

**C2.2 (0041)**

Research on Information Interaction Mechanism of Plug-and-Play of Battery Energy Storage System

Jing Xie, Yu Lu, Qi Ye, Jianting Zhang, Wentao Huang

**C2.3 (0126)**

On-line diagnosis method for transformer winding deformation based on running voltage and current correlation mining

Yiming ZHENG, Wenhao WANG, Chunyan GONG, Chen LI, Xiang SUN, Wei DU, Zhongsheng HUA

**C2.4 (0233)**

Circuit Theory-based Method for Power Loss Estimation in Distribution Systems with Distributed Generator

Juntai Cui, Li Zhang, Boyi Zhang, Keqiang Li

**C2.5 (0250)**

Improvement of Frequency Stability in Microgrids Integrated with Electric Vehicles Based Virtual Inertia Control

Hossam Ali, Gaber Magdy, Binbin Li, Dianguo Xu

**C2.6 (0311)**

A Novel Variable Speed Constant Frequency Generation System for Steam Turbine and Boiler Feed Pump

Jieyuan Tan, Jianwen Zhang, Gang Shi, Zhenkun Xiao, Jian Xu

**15:00 --- 15:30 Poster Session and Refreshments**

- 15:30 --- 17:00 **C2.7 (0330)**  
Coordinated Reactive-load Compensation Method for Distributed Network  
Qi Liu, Lei Su, Weipeng Liang, Pei Sun, Jingning Yang
- C2.8 (0482)**  
A Fault-Tolerant Control Strategy for Six-Phase PMLG In Direct-drive Wave Energy Conversion System  
Lei Huang, Minshuo Chen, Ghulam Ahmad
- C2.9 (0513)**  
Electrical Vehicle Ordered Charging Control Based on Electrical Price Guiding Strategy  
Changchun Cai, Mengrui Xi, Lei Guo, Shuqin Wang, Saifeng Zhu
- C2.10 (0640)**  
Development of High Frequency Resistance Test Bench for High Power Fuel Cell Stack  
Tiancai Ma, Weikang Lin, Yanbo Yang, Kai Wang, Wenya Jia
- C2.11 (0752)**  
Voltage Fluctuation Suppression Method for DC1500V Traction System Based on Flywheel Energy Storage System  
Dan Zhang, Jianguo Jiang, Liang Zhang, Zhongzheng Zhou, Yunlong Liu, Sifeng Zhao
- C2.12 (0842)**  
Markov Chain Monte Carlo Sampling Based Bayesian Multivariate Linear Spline Load Forecasting Agent for Microgrid Energy Management System  
Sujil A, Rajesh Kumar, Ramesh C Bansal

**Session F2\*: Planning, policy and marketing options**

-- electricity markets facilitating renewable energy integration

09:00 – 10:30 Session F2\* chair: Prof. Ming YANG, Shandong University, China

- 09:00 --- 10:30 **F2\*.1 (0062)**  
Distributed Equilibrium Interactive Strategy of Integrated Energy System Based on Demand Response Using Dual Decomposition Method  
Yimin Zheng, Jun Xie, Xingying Chen
- F2\*.2 (0085)**  
Design of the Renewable Portfolio Standards Based Renewable Energy Certificate Trading Mechanism in China  
CX Wang, ZQ Li, XN Ye, QH Li, XJ Lei, W Yuan, ZY Shi
- F2\*.3 (0176)**  
An Energy Trading Strategy Considering The Priority Of Renewable Energy and Electric Vehicles  
H Yuan, H Zhang, Y Hu, D Fan, C Wang, Y Wang
- F2\*.4 (0415)**  
Investigate the Influence of Renewable Energy Penetration on the Electricity Market Equilibrium  
C C Li, Z F Yang, J Yu, P Zou, Y C Zhang
- F2\*.5 (0468)**  
Study on the Impact of Renewable Portfolio Standard on Ningxia Renewable Energy Consumption Based on System Dynamics  
N Mi, H L Zhang, H J Tian, Y T Yao, C W Gao

**F2\*.6 (0526)**

Equilibrium model of electricity market considering green certificate transaction under renewable portfolio standard

Y C Li, S N Zhao, H Chen, Y Jin, Y Ding, B B Wang

**F2\*.7 (0674)**

Analysis of Generation Rights Transaction Mechanism Based on Inter-provincial Renewable Energy Consumption

Hua Chang, Bo Zhou, Kewei Fan, Gaohong Song, Pengzheng Zhang, Jinhui Guo, Weiyi Duan

10:30 --- 11: 00 **Poster Session and Refreshment**

**Session D2\*: Energy Internet and Smart City**

-- Harbor & off-shore renewable energy integration and green maritime transportation

11:00 – 12:30 Session D2\* chair: Prof. Sidun FANG, Nanyang Technological University, Singapore

11:00 --- 12:30 **D2\*.1 (0091)**

Robust Co-planning of Transmission and Energy Storage Considering Uncertainty Correlation

Chengming Zhang, Haozhong Cheng, Heng Zhang, Zheng Wang, Jianzhong Lu, Xiaohu Zhang

**D2\*.2 (0131)**

A Decision Making Method for Berthed Electric-Ships based on Generalized Nash Game

Sidun Fang, Hongdong Wang, Ce Shang, Tianyang Zhao, Jiawei Lv

**D2\*.3 (0280)**

Security-Constrained Transmission Expansion Planning Considering High Proportion of Wind Power and Natural Disasters

Jing Zhou, Dundun Liu, Haozhong Cheng, Heng Zhang, Shenxi Zhang, Xiaohu Zhang, Jianping Zhang

**D2\*.4 (0327)**

Day-ahead optimal scheduling of district-level integrated energy system considering data centre

Jiawei Lv, Shenxi Zhang, Yi Song, Kai Yuan, Haozhong Cheng, Sidun Fang, Heng Zhang, Chengming Zhang

**D2\*.5 (0358)**

Joint Generation and Energy Storage Systems Expansion Planning in Interconnected Power Systems with High Penetration of Wind Power

Heng Zhang, Haozhong Cheng, Shenxi Zhang, Jianping Zhang, Jianzhong Lu, Cong Li

**D2\*.6 (0359)**

Coordinated Scheduling and Optimal Control of All-Electric Ship Energy System based on Mixed Logical Dynamic Method

Guanhong Chen, Dong Liu, Lixia Yan

**D2\*.7 (0394)**

Optimal Quasi-Synchronous Condenser and Generator Dispatch for Voltage Stability and Peak-Shaving

Z C Ma, H Z Cheng, H Zhang, C X Feng, S D Fang, J P Zhang

**D2\*.8 (0546)**

Optimal coordinated generation and demand scheduling for ship hybrid energy system

Qimin Xu, Bo Yang, Cailian Chen, Yazhou Yuan, Feilong Lin



**12:30 --- 13:30 Poster Session and Lunch**

**Session D2: Energy Internet and Smart City**

13:30 – 17:00 Session D2 chair: Prof. Bowen ZHOU, Northeastern University, China

13:30 --- 15:00 **D2.1 (0048)**

Business Model and Economic Analysis of User-side BESS in Industrial Parks in China  
Changcheng Zhou, Yang Hu, Peng Li, Xiyuan Ma, Jinyong Lei, Zhiyong Yuan,  
Zuanhong Yan

**D2.2 (0160)**

Parameters Identification of Synchronous Condenser Based on Sensitivity Analysis of  
Parameters and Particle Swarm Algorithm  
Jihao Wang, Andong Wang, Zhiwei Cao, Wenbing Zhu, Chao Gu, Fuchun Sun,  
Shanhua Sun

**D2.3 (0209)**

Multi-objective optimal scheduling method for Regional Photovoltaic-Storage-Charging  
Integrated system Participating in Demand Response  
Tiantian Jiang

**D2.4 (0253)**

Forecast of power quality disturbance events in urban distribution networks  
incorporating weather conditions  
Fei Xiao, Wen Xiong, Qian Ai, Yufan Zhang, Mingli Wu

**D2.5 (0499)**

Energy Internet Optimization Scheduling for Wind Energy Consumption Considering  
High-energy Load and Electricity-to-Gas  
Weichun Ge, Tao Wang, Jing Gao, Yihe Wang, Shunjiang Wang, Yi Liang, Dewei Zhao,  
Jiayuan Wang, Bonan Huang

**15:00 --- 15:30 Poster Session and Lunch**

15:30 --- 17:00 **D2.6 (0586)**

Clean energy on wheels: model, optimisation and P2P energy trading for active  
distribution networks in smart cities  
Nand Meena, Jin Yang

**D2.7 (0697)**

A Survey on Social Media to Enhance the Cyber-Physical-Social Resilience of Smart  
Grid  
Wei Sun, Prabin M. Baidya, Austin Perkins

**D2.8 (0708)**

Research on zero-sequence control strategy of flexible multi-state switch based on  
transformerless VSC-MVDC  
Feng Xu, Yi Lu, Li Li, Chaoliang Wang, Chao Ding, Mei Zheng

**D2.9 (0722)**

Application of Improved SVM Algorithm and Variational Mode Decomposition in Power  
Quality Disturbances Recognition  
J Liu, H Song, H Zhao, J Liu, Z Wu

**D2.10 (0792)**

Investment Decision Model of Smart City Multi-energy System based on Supply and  
Demand Characteristics Analysis  
Kuihua WU, Jian WANG, Fei WANG, Wei SUN, Yanshuo WANG, Zhipeng LU, Peng DU

## Session G2\*/G2a: System Operation and protection

-- Sensing, Fault diagnosis and Fault tolerance for Renewable Energy System

09:00 – 12:30 Session G2\*/G2a chair: Prof. Yingning QIU, Nanjing University of Science and Technology

### 09:00 --- 10:30 **G2\*.1 (0412)**

VIBRATION SIGNATURE OF DIRECT-DRIVE WIND TURBINE UNDER CONVERTER OPEN-SWITCH FAULT

Ming Ren, Yingning Qiu, Yanhui Feng, Guangyuan Huang, Chen Xu

### **G2\*.2 (0414)**

Improved Vector Current Control for Grid Side Converter in PMSG Wind Turbine with Fault Tolerance Capability

Muhammad Waseem, Yanhui Feng, Yingning Qiu, Chao Sun, Hadeed Ahmed Sher

### **G2\*.3 (0597)**

Research on BMS of Large Scale Battery Energy Storage Power Station

guoning xu

### **G2\*.4 (0718)**

A Statistical Learning Framework for the Intelligent Imputation of Offshore Wind Farm Missing SCADA Data

X Liu, Z Zheng, Z Zhang, Z Cao

### **G2\*.5 (0833)**

Stator Inter-Turn Fault Diagnosis of Induction Motor Based on Wavelet Packet Decomposition and Random Forest

Liling Sun, Kuankuo Zhang, Xiangdong Lu

### **G2a.6 (0128)**

High impedance fault analysis and location of single-phase-to-ground fault in feeder with multiple DGs connections

Xuan Ren, Bin Wang, Xinzhou Dong

10:30 --- 11:00 Poster Session and Refreshment

### 11:00 --- 12:30 **G2a.7 (0145)**

Transient energy analysis and dissipation of a bipolar MTDC wind power integrating system during MMC outage

S Cao, W Xiang, X J Lu, W X Lin, J Y Wen

### **G2a.8 (0150)**

Current Control Scheme Under Capacitor Aging In Modular Multilevel Converter

Qian Heng, Fujin Deng, Chengkai Liu, Qingsong Wang, Jianfei Chen

### **G2a.9 (0169)**

The Impedance Modelling of MMC for Oscillation Analysis Considering Control Dynamics and Delays

Fan Zhang, Congqi Yin, Xiongping Yang, Yongjun Liu, Chao Hong, Xiaorong Xie

### **G2a.10 (0187)**

Resilience-oriented Operation Scheme For AC/DC Distribution Network Integrated with Distributed Energy Storage System

Hang Yin, Youbo Liu, Qiang Li, Hongjun Gao, Yue Xiang, Junyong Liu

### **G2a.11 (0243)**

An evaluation method of feeder automation for distribution network considering distributed generation

Xiuru Wang, Gang Liu, Dong Qiu, Yong Lai, Wanshui Ling

**G2a.12 (0257)**

Analysis and Research on Network Security Vulnerabilities of Renewable Energy Field Stations

PENG WANG, JUNFEI HAN, CHAOYU YU

**12:30 --- 13:30 Poster Session and Lunch****Session G2b: System Operation and protection**

13:30 – 17:00 Session G2b Chair: Dr. Zhibing WANG, China Electric Power Research Institute (CEPRI), China

**13:30 --- 15:00 G2b.1 (0263)**

A test method for UHVDC protection based on wide area information synchronization  
Chenqing Wang, Xiangping Kong, Peng Li, Lei Gao

**G2b.2 (0304)**

Resiliency-Oriented Multi-Energy Complementary Microgrid Robust Optimal Operation Strategy Considering the Uncertainty

J Wang, X D Zheng, N L Tai, Z L Yang, J Wang, W Wei, L F Li

**G2b.3 (0329)**

Stability-constrained Offshore Transmission Planning for Large-scale Remote Wind Farms

Y SUN, K MENG, W ZHANG, J HUANG, L YUAN, J DONG

**G2b.4 (0406)**

Stability analysis of grid-connected VSC based on impedance modelling

L Yuan, K Meng, J Huang, Y Sun, Z Y Dong

**G2b.5 (0428)**

Control Function Research and Performance Test of Wujiang STATCOM Project  
Jinjiao Lin, Peng Li, Shi Chen

**G2b.6 (0465)**

Technical Challenges of Integrating High Proportion Distributed Photovoltaic Power into Medium DC Grid

Wei Chunxia, Wang Zhibing, Li Qing, Liu Hongzhi, Liu Chao

**G2b.7 (0533)**

Users' Electricity Consumption Behaviour Analysis in Distribution Network Based on High Dimensional Random Matrix

Qizhen Sun, Fangzhou Hao, Chao Shen, Guolong Ma, Yong Huang, Yuzhao Wu

**15:00 --- 15:30 Poster Session and Refreshments****15:30 --- 17:00 G2b.8 (0542)**

Coordinated Multiple HVDC Modulation Emergency Control for Enhancing Power System Transient Stability

Congcong Li, Tong Wang, Zengping Wang, Tie Li, Junci Tang, Anlong Su, Kai Gao, Feng Jiang, Di Jiang, Yushi Zhang, Xiaopeng Xu

**G2b.9 (0626)**

A new suppression strategy for switching frequency circulating current in parallel inverters

Song Chi, Lan Cheng, Xue Li, Mingxuan Hou

**G2b.10 (0819)**

An improved benchmark level evaluation method for power quality

Shen Minxuan, Liu Yingying, Feng Dandan, Tongxun Wang

**G2b.11 (0832)**

Stability Analysis of Compensated Modulation Based MMC-HVDC for Wind Farm Integration

J Lyu, T Xue, J Dai, J Jing, C Zhang, X Cai

**G2b.12 (0855)**

MTDC Topological Analysis and Evaluation for High Penetration of Renewable Energy

Y Zhao, W T Huang, N L Tai, X Z Xi

**G2b.13 (0875)**

Machine learning based impedance estimation in power system

Kamyab Givaki, Saleh Seyedzadeh, Kamyar Givaki

**Session E2\*/E2a: Grid Integration**

-- Sub- and Super-synchronous Control Interactions in RPG-integrated Power Systems

09:00 – 12:30 Session E2\*/E2a chair: Prof. Xiaorong XIE, Tsinghua University, China

09:00 --- 10:30 **E2\*.1 (0112)**

SupSO modes and oscillation suppression strategy for large scale renewable source generation connected power grids

Shuitian Li, Tao Lin, Yibiao Sheng, Xialing Xu

**E2\*.2 (0207)**

Research on SSO suppression method based on reduced order model and variable structure control

D C Zang, X Zhao

**E2\*.3 (0215)**

An Extended Kalman Filtering based Time-Varying Fundamental and Subsynchronous Frequency Tracker

Jan Shair, Wei Huang, Xiaorong Xie, Chen Wu, Min Cheng

**E2\*.4 (0293)**

Mitigation of Subsynchronous Oscillation in the Large-scale Wind Energy Transmission System with HVDC Link Based on the Local Gain-varying Control

Yang Na, Wang Xitian, Yang Bingdeng, Xie Da

**E2\*.5 (0407)**

Investigating the transient torque of turbo-generators in a power system integrating wind farms

BW Yang, GG Yan, XR Xie, YH Wang, J Tang

**E2\*.6 (0643)**

Optimization of control parameters for PMSG-based wind farm and SVG considering subsynchronous interaction

Y. Liu, B. Huang, H. Sun, Y. Zhang, Y. Han, Y. Yu

**E2\*.7 (0776)**

Analysis of Prefilter Phase-Locked Loop under Interharmonic Perturbation

C Hou,

M Zhu, Y Chen, X Cai

10:30 --- 11:00 **Poster Session and Refreshments**11:00 --- 12:30 **E2\*.8 (0777)**

The Influence of Phase-Locked Loop on the Impedance of Single-Phase Voltage Source Converter

Z Li, M Zhu, C Hou, X Cai

**E2a.1 (0313)**

Improved Stochastic Power Flow Algorithm Based on Discrete-normal Stacking of Cumulants

Yanshuo WANG, Kuihua WU, Liang FENG, Rong LIANG, Long ZHAO, Lei SONG, Tianyi WANG

**E2a.2 (0354)**

A Method for Multi-VSC Interaction Analysis Based on Current Excitation and Voltage Response in Current Control Timescale

S Li, X Yuan, M Zhang

**E2a.3 (0396)**

Design of an energy management scheme for residential demand response in a microgrid system

T Adefarati, R Bansal, R Naidoo

**E2a.4 (0397)**

Start-up Strategy for Modular Multilevel Converters with Modified Nearest Level Modulation Method

W Liu, G Li, C E Ugalde-Loo, J Liang

**E2a.5 (0457)**

Analysis of High Voltage DC Transmission network for the Future Energy needs of Pakistan

Muhammad Haroon Nadeem, Xiaodong Zheng, Nengling Tai, Muhammad Farrukh Tabassum, Mehr Gul, Zhengguang Xiao

12:30 --- 13:30 **Poster Session and Lunch**

**Session E2b: Grid Integration**

13:30 – 17:00 Session E2b chair: Prof. Hua GENG, Tsinghua University, China

13:30 --- 15:00 **E2b.1 (0472)**

Sub-synchronous Torsional Interaction with LCC-HVDC in DC Current Control Timescale

Xin Wei, Jiabing Hu

**E2b.2 (0505)**

Evaluation of EV Battery Degradation under Different Charging Strategies and V2G Schemes

JINGLI Guo, JIN YANG, WENPING CAO, CLARA SERRANO

**E2b.3 (0545)**

Grid balancing with a large-scale electrolyser providing primary reserve

A E Samani, A D'Amicis, J D M De Kooning, P Silva, L Vandeveld

**E2b.4 (0616)**

State-varying Inertia and Time-decaying Damping Emulation Control Scheme for VSC-HVDC Transmission System

Zhipeng Shen, Jiebei Zhu, Grain Adam, Xialin Li

**E2b.5 (0629)**

Coupling analysis of multi-heterogeneous energy systems considering wind-photovoltaic power

L Ye, X Qu, Y Yao, H Li, J Liu

**E2b.6 (0661)**

A restructure method for the traditional distribution network with multi-port power electronic transformer

Xinxing Xu, Yan Hu, Nengling Tai, Ning Xie, Qing Chen, Qi Geng

15:00 --- 15:30 Poster Session and Refreshment

**E2b.7 (0672)**

Chance-Constrained Optimization for Multi-energy Hub system with Dynamic Thermal Rating

Yuanbin Zhu, Da Huo, Chenghong Gu

**E2b.8 (0730)**

Application and Design of VSC-HVDC Distribution Networks for Connection of Renewable Energy Sources

Liu Yao, Wen An, Yang Kun, Liu Renliang, Chen Yong, Chen Bing, Guo Fang, Gang Yi, Wu Ming

**E2b.9 (0737)**

Virtual Synchronous Generator Controlled Matrix Converter for Grid Integration in Distributed Generation and Microgrid

Jianwei Zhang, Haichen Chang, Tingting He, Na Zhang, Guangchen Liu

**E2b.10 (0801)**

Economic Technical Analysis of Low Frequency Transmission System under Scene of Renewable Energy Integration into Grid

Jingwen Han, Lianhui Ning, Ziqiang Zhou

**E2b.11 (0831)**

General modelling method for impedance of voltage source converter

Wang Zhibing, Liu Hongzhi, Li Qing, Wei Chunxia

**E2b.12 (1000)**

DISASTER RECOVERY STRATEGY OF RESILIENT DISTRIBUTION NETWORK BASED ON SCHEDULING COEFFICIENT

Jun Wang<sup>1</sup>, Xiaodong Zheng<sup>1\*</sup>, Nengling Tai<sup>1</sup>, Yu Liu<sup>3</sup>

## Poster Presentation Day One

09:00 – 17:00 | 24<sup>th</sup> Oct 2019 | 2<sup>nd</sup> & 3<sup>rd</sup> floor Foyer

Poster ID	Paper ID	Title	Author(s)
PO001	0004	Influence of Circuit Breaker Features on Switching Overvoltage of 35kV Shunt Reactor on No-load Busbar—I. Theoretical and Simulating Analysis	Haojun LIU, Yiming Zheng, Wenjing LIU, Chen Li, Chaoao WEI, Zhi YANG, Xiang SUN, Lin ZHAO
PO002	0007	Research on Power Balance Problem of High Renewable Energy Penetration Ratio System	Chi Li, Yuehui Huang, Chun Liu, Yuefeng Wang, Ming Zhou
PO003	0012	Study on Reliability Improvement of Current-transferring Type HVDC Circuit Breaker	F Xu, Y Lu, J H Li, Q Chen, P Qiu, D Z Jiang
PO004	0020	Development of GIS real defect simulator used in SF6 gas insulated substation and intelligent fault recognition	Shiling zhang
PO005	0024	The Preemptive Virtual Impedance based Fault Current Limiting Control for MMC-HVDC	Jun Yan, Chengyong Zhao, Fan Zhang, Jianzhong Xu
PO006	0029	Power System Fault Chain Simulation Model Considering the Effect of Geomagnetic Storm	Xiaoning Kang, Yini Xu, Yagang Zhang
PO007	0034	Pilot Protection Scheme for Pole-to-ground Fault in DC Distribution Network	S Jiang, C Fan, N Huang
PO008	0036	Study on Equivalence of Modular Multilevel Converter Modeling under Multi-dq Frames and Harmonic State Space	Zigao Xu, Binbin Li, Shiguang Zhang, Linjie Han, Junlin Hu, Dianguo Xu
PO009	0038	A High Frequency Hybrid Active Filter Based on SiC MOSFET	Ke Zhou, Xiaoyin Qiu, Qingren Jin, Min Guo, Ge Zhang, Hao Qiu
PO010	0039	Influence of virtual inertia in wind turbines on large-scale power grid frequency characteristics	Dawei Sun, Feng Zhao, Hui Liu, Yaohan Wang, Peng Song, Xiaosheng Wang
PO011	0042	Operation Area Calculation and Parameter Analysis of Virtual Synchronous Machine	J J Li, J J Zhou, Y Shan
PO012	0043	Minimisation of distribution feeder loss using ant colony optimisation applied to network reconfiguration and distributed generations placement	Boyi Zhang, Linghan Zhao, Fei Wang, Kuihua Wu, Rong Liang, Liang Feng, Peter Crossley
PO013	0046	Faulty Line Selection based on Active-Intervention-Type Arc Suppression Device via Additional Neutral Resistance	Kai Xu, Peng Wang, Fang Shi, Chunyan Bian

PO014	0047	Economic Feasibility Analysis of Using Battery Energy Storage to Reduce Renewable Generation Curtailment in CSG	Hu Yang, Zhou Changcheng, Yan Zuanhong, Li Peng, Ma Xiyuan, Lei Jinyong, Yuan Zhiyong
PO015	0049	EVALUATION OF TRANS-REGIONAL UHVDC TIELINE POWER OPTIMIZATION IN PROMOTING RENEWABLE ENERGY ACCOMMODATION	X F Li, Y H Huang, Y F Wang, M Zhou
PO016	0051	State of transformer based on principal component analysis and support vector machine Evaluation system research	Xinghua Liu, peng Gao, Kecun Han, xuebin Lv, chao Yang, tongping Xie, yang Yu, Peng Sun, Hongshun Liu, Jian Guo
PO017	0054	A Dynamic Defense-Attack Game Scheme with Incomplete Information for Vulnerability Analysis in a Cyber-Physical Power Infrastructure	Boyu Gao, Libao Shi, Yixin Ni
PO018	0058	Research on the Scheme of the sample synchronization scheme for optical differential protection scheme in Merge Unit	Bao-wei LI, Chuan-kun NI, Xintao Dong, Xu LI, Zheng Fang, Yaxin SU
PO019	0063	AN ALGORITHM FOR ANALYSING INFLUENCING FACTORS OF ANNUAL ELECTRICITY CONSUMPTION	Weiyuan WANG, Jinmin CHENG, Yi SUN, Jiliang XUE, Xuan YU, Ziyuan REN
PO020	0064	Research on Island Operation of Small Scale Hydro Powered Network with Back-to-Back MMC-HVDC	Z Gai, F WANG, H LI, W JIANG, Q CHEN
PO021	0067	Modeling and Forward Suppression Strategy of Circulating Current in MMC-HVDC	Hu Yinghong, Cai Wei, Long Kaihua, Zhang Jinglan, Zhao Yuan, Zhao Yankun
PO022	0068	Research and Application of Large-scale Renewable Energy Control & Monitoring System Key Technologies	Junhua Zhang, Jinjiang Lan
PO023	0070	Fuzzy Modelling of Power System Economic Dispatch Incorporating Load and Wind Generation Uncertainties	Kai Zhao, Libao Shi, Yixin Ni
PO024	0078	Adjustable Robust Optimal Power Flow Considering Random Output of Various Renewable Energy Integration in Complex Three-phase Distribution Networks	Yiqi Cao, Junwei Liu, Danping Wang
PO025	0079	Agent-Based Simulation for Electric Vehicle Aggregators' Bidding and Pricing Strategy Considering Reserve Provision	Luhua Xing, Pengfei zhang, qian ai, ning zhou, kang zhao, wenbo li
PO026	0081	The Operating Environment Substitution-Based Field Test Technology of UHVDC Protection System: Part 1 Test Scheme and Hardware Environment Substitution	Xiangping Kong, Juan Li, Wenzhe Mei, Chi Zhang



PO027	0082	The Operating Environment Substitution-Based Field Test Technology of UHVDC Protection System: Part 2 Software Environment Substitution and Field Application	Xiangping Kong, Xinyue Gong, Zhihai Shu, Chenqing Wang
PO028	0083	The Visualization Technology of the UHVDC Control and Protection System Based on Deep Learning	Xiangping Kong, Lei Gao, Peng Li
PO029	0084	Study on the method of grid planning on Space-time distribution of power system frequency	zhicheng sha, Shuang Dong, Zhunping Zhu
PO030	0089	Research on Startup Circuit Parameter Selection and Startup Control Strategy for Multi-terminal VSC HVDC System	Ying Huang, Yuke Ji, Yuxin Lu, Weihuang Huang
PO031	0092	Protection adaptability analysis in VSC-HVDC-connected offshore wind farm system	Junfei Han, Liming Zheng, Ke Jia, Yu Fang, Zhe Yang, Rui Chen
PO032	0093	Impact of the accuracy of NWP wind speed forecasts on wind power forecasting	Yimei Wang, Yongqian Liu, Peng Song, Hui Liu, Zechun Hu
PO033	0094	An Improved Cumulant-Based Probabilistic Energy Flow Computation Method for Integrated Electricity and Natural Gas Systems	X Deng, P Zhang, H Liu, J He, L Wu, X Wang, Y Wang
PO034	0097	Pilot protection principle for HVDC transmission lines based on current correlation	Bo Yuan, Zhipeng Jing, Jingmao Zhang, Lijie Zhang, Shuai Tang, Chan Peng, Zhang Zhang, Ying Wang, Hua Shao, Liangdong Qin, Zhihui Dai
PO035	0104	Two-terminal Fault Location Scheme based on Distributed Parameters of Cable-overhead Hybrid Transmission Line	Bao-wei Li, Xin-tao Dong, Li Wang, Ming-hao Wen, Ya-xin Su
PO036	0106	A novel power forecasting method for distributed PV system based on finite data	Hang Xu, Yuanpeng Zhang, Junen Li, Shuai Yuan, Xingong Cheng
PO037	0109	A Multi-pattern Coordinative Scheduling for Large Capacity Energy Storage System	Zhi Cai, Yanfeng Ge, Jiawei Huang, Songjie Shi, Dan Xu, Cuihui Yan
PO038	0115	Arm Current Balancing Control Strategy for Modular Multilevel Converters Under Grid Fault Conditions	Jinyu Wang, Yi Tang, Pengfeng Lin, Qian Xiao, Huan Qiu
PO039	0117	Regional Coordination Control of Active Distribution Network Based on Model Predictive Control	Wei Du, Dong Liu

PO040	0125	Short-term wind power prediction based on singular value decomposition and multi-position NWP	T M Liu, L J Wang, Z Wang, B Wang, Y Lin, D S Huang
PO041	0127	Sub-parts control parameter fitting method of VSC based on RTDS	peng xu, huan xie, tao wu, tianqi zhao
PO042	0129	Regional Adaptability and Economic Evaluation Based on Electric Vehicle Policy Analysis	X Y Zhou, D S Yang, B W Zhou, Z L Yang
PO043	0130	Correlation Analysis Between Load And Output of renewable energy generation Based On Time-varying Copula Theory	Zhang Mingze, Huang Yichao, Yuan Minghan, Wang Min, Sun Xinyuan
PO044	0132	Phase Angle Compensation of Virtual Impedance for Resonance Mitigation in DFIG System under Weak Grid	Zakiud Din, Jianzhong Zhang, Zheng Xu, Yaqian Zhang
PO045	0133	Virtual Inertia Online Control Strategy for DC Grid Based on Variable Droop Coefficient	X Huang, Y Hong, J Liu, P Jia
PO046	0135	Combined Heat and Power Economic Dispatch Solution Incorporating Wind Power Uncertainty	Y Song, L Shi, Y Ni
PO047	0139	Harmonic Current Assessment Method For Wind Farm Excluding Background Harmonics	Li Jianli, Li Qing, Zhao Jinshuai, Zhang Jinping
PO048	0141	Frequency Response Characteristic Analysis of SSCI for DFIG-based Wind Farms Considering Rotor Speed Control Based on Complex Torque Coefficients method	Jicheng Zhou, Xiaotao Peng, Peng Luo, Kai Liang, Zhen Zhang, Jia Tang
PO049	0143	Multi-Objective Optimization of Wind Turbine via Controllers Coordination and Sensitivity Analysis	Zhenyu Chen, Zhongwei Lin, Chuanxi Wang, Xiangyu Han, Gengda Li, Feng Hu, Zongming Si
PO050	0144	Improving Operation Feasibility of Low-voltage Distribution Network by Phase-switching Devices	Bin Liu, Ke Meng, Peter Wong, Zhao Yang Dong, Cuo Zhang, Bo Wang, Tian Ting, Qu Qi
PO051	0147	High resistance grounding fault feeder detection in a resonant grounding system based on transient current correlation coefficient comparison	Xin Cui, Bin Wang, Xinzhou Dong
PO052	0149	A Coordinated Control Strategy of Electric Spring Based Smart Load Technology	X Luo, YY Shao, YP Li, P Peng, HF Wang, J Li
PO053	0153	Exploring Demand Side Flexibility via Smart Energy Hub in Two-Stage Electricity Markets	X Wang, J Wang, Z Liu, Y Song, Y Zhang, Z Wu, T Song

PO054	0155	Power System Dynamic Economic Dispatch with Multi-type Renewable Energy	J Z Zhu, Q B Liu, Z Y Chen, S L Li, T Y Luo
PO055	0157	Virtual Synchronous Generator Control in Solid-State Transformer with DC Voltage Compensation	Zirun Li, Jin Xu, Pan Wu, Keyou Wang, Guojie Li
PO056	0163	Dynamic Economic Dispatch Solution Considering Wind Speed Dependence of Multiple Wind Farms	Yating Zhou, Libao Shi, Yixin Ni
PO057	0164	Research on Control Strategy of LCC-MMC Hybrid HVDC System	J Lv, X Ye, M Yang, R Jiao
PO058	0167	Research on System Conditions of a 500kV Novel Fault Current Limiter Based on HCSR	CY Xiang, WJ Xu, ZT Xiang
PO059	0170	A frequency division control for hybrid energy storage system considering the unbalanced current rate of change in DC micro-grid	Yuhan Zhang, Guiping Du, Yanxiong Lei, Tiansheng Zhu
PO060	0171	Evaluating and Optimizing the Evenness of Power System Load Distribution	W Q Sun, K P Tian, C Yang, D Han, W Zhang, P F Xi
PO061	0172	Generation-Grid-Storage Coordinated Planning Method with the Renewable Portfolio Standard	K P Tian, W Q Sun, C Yang, D Han, W Zhang, P F Xi
PO062	0174	Design and Implementation of a Universal Grid Computing Platform Applicable to Optimal Operation Of Power Grid	Jialun Zhao, Libao Shi, Yixin Ni
PO063	0178	Multi-objective optimal dispatch method based on source-network-load-storage interaction system for DC distribution network	Ran Quan, Guoqing Li, Guobin Jin, Zhao Liu, Qing Chen
PO064	0179	Study on voltage segment control strategy of large-scale renewable power base based on hierarchical-partitioned principle	Chao Liu, Yuanyuan Su, Xi Li, Hongzhi Liu, Yan Li, Qing Li
PO065	0181	Power Grid Frequency Regulation Participated by Photovoltaic Generation to Adapt to Different Control Modes of Grid-side AGC	Gangui Yan, Wenbo Hu, Qi Jia, Dan Wang, Guoqing Zhou
PO066	0190	Synergetic Control Based on Rotor Speed Regulation with Variable Proportional Coefficient for Doubly-fed Wind Turbines Implementing Virtual Inertia Support	K Liang, X Peng, J Zhou, R Wang, F Li
PO067	0191	Research on Short-circuit Current Improvement Algorithm of Doubly-fed Wind Farm Based on Low Voltage Low voltage ride through	WW Yang, SH Wang, F Gao, YJ Chang, G Jin

PO068	0194	Research on background harmonic evaluation of UHV DC access considering mutual impedance of external nodes of power grid	Zhenhua Lv, Mingming Shi, Weijia Tang, Shanshan Luo, Juntao Fei
PO069	0196	Individual Pitch Control Strategy for a Low Wind Speed Wind Turbine	P Jiang, Z Q Gao, Y Z Wang, Q L Li, B F Xu
PO070	0198	Quantitative Analysis of Transient Interaction between Wind Farms	Jing He, Qing Li, Yuanzhu Chang, Jinping Zhang
PO071	0202	Current decoupling control under asymmetrical open-circuit faults of dual three-phase PMSG.	Y C Gao, G Yao, L D Zhou
PO072	0203	Power Control and Experiment of 2MW/10kV Cascaded H-Bridge Power Conversion System for Battery Energy Storage System	Kai Tian, Salman Ali, Zhong Huang, Zhibin Ling
PO073	0208	Reduced-Order Model of VSC-HVDC Applied to Passive Network Based on Optimal Reduction Algorithm	Ting Wang, Guobing Song, Lishuai Yin
PO074	0211	A Convex Model for Shipboard Grid Fault Reconfiguration	Dali Wu, Sining Han, Huirui Zhang, Jun Yang, Xiangpeng Zhan
PO075	0214	An Identification Method for Single-Line-to-Ground Fault with Line Break in Distribution Networks	Kejun Li, Yadong Liu, Peng Wang, Lingen Luo, Jindun Dai, Xiuchen Jiang
PO076	0220	Evaluation Method of Power System Flexibility for Renewable Energy Accommodation	K P Tian, W Q Sun, C Yang, D Han, W Zhang, P F Xi
PO077	0221	An Improved Fault Recovery Strategy for Active Distribution Network Considering LVRT Capability of DG	Yongji Cao, Weisheng Liu, Yi Zhang, Hengxu Zhang
PO078	0227	Analysis on Stability of DC Distributed Power System	Benben Xiao, Xiaoyun Zhou, Xiaoxia Hu, Zhewei Diao
PO079	0228	A system state modelling and ABC procedure optimization for combined renewable, cooling, heat, and smart building.	Po han Chen, Kai Sun, Chenghui Zhang, Bo Sun
PO080	0231	Research on Voltage Stability and Optimal Operation of DC Microgrid	Shuquan CHEN, Zhaoyun ZHANG, Zhi ZHANG, Tianli LI
PO081	0235	Wind farm active voltage regulation strategy of transient support improvement	Cui Yang, Song Peng, Cheng Xuekun, Qiao Ying, Wang Xiaosheng, Liu Jingbo
PO082	0241	Impact of the DC Voltage Control stability of Grid-connected PMSG on Electromechanical Oscillation of Power System	Qingxi Sun, Wenjuan Du

PO083	0246	Research on Price Mechanism of Electrochemical Storage Power Station for Power Grid	ZY Shi, CX Wang, W Yuan, XJ Lei, ZQ Li, XN Ye
PO084	0247	State estimation in distribution system consideration RES uncertainties with correlations	Xingzhi Li, Bei Han, Guojie Li, Lin Feng, Keyou Wang, Chunming Wang
PO085	0248	Method of Emergency Degree Evaluation of Power Grid Frequency Response	Wang LIAO, Dong LIU
PO086	0249	Assessment of voltage fluctuations based on wind power fluctuation characteristics. doc	Yufeng Guo, Qi Wang, Jilai Yu
PO087	0251	Research on Efficiency Increase of the Automatic Voltage Control System in Shanghai Urban Power Grid	Chen Sun, Jie Xu, Bin Cai, Zhenrui Yang, Xiaofu Li
PO088	0254	Research on Transient Overvoltage of Transmission Lines Combined with 500 kV XLPE Submarine Cable and Overhead Line	Lin Zhao, Liya Ye, Yong Yang, Te Li, Naiyi Li, Ning Xu
PO089	0259	Research on Control Scheme of Single Phase high Efficiency Bridgeless PFC Based on GaN	Kang Jun
PO090	0260	The Influence of Wind/PV Generation Uncertainties on Power System Low Frequency Oscillation	Liu Daoming, Shi Libao, Ni Yixin
PO091	0266	Decentralized Generation-Storage-Load Coordination Control for DC Microgrid	Qing Chen, Haitao Liu, Zeyan Lv, Yong Zhang, Miao Yu, Wei Wei
PO092	0268	The optimal operation of power-heat-gas system with storage and uncertain wind generation	X Wang, Z Yu, X Chen, T Wang, Y Wang, H Zhu, D Sun, C Wang, J Liang
PO093	0276	Analysis on the contribution of factors affecting the total city energy consumption	Linyu Wang, Lei Guo, Yahui Ma, Jiawei Zhou
PO094	0277	Analysis on the VSC based controller for damping SSR in multi-generator system	X T Yuan, S Gao, Y Z You, X F Wu, Y S Wu, G H Wu, F Zeng, Z C Du
PO095	0279	A smooth LVRT switching control method for doubly-fed self-synchronous generator	Zhuang ShengLun, Guo Liang, Sun Sujuan, Ji Xiaoqing, Qu Xinhong
PO096	0285	Research on maximum power point tracking control of wind turbine based on corrected wind speed	Zixin Chen, Yanhui Qiao, Shuang Han, Yongqian Liu, Jie Yan, Li Li
PO097	0286	A Frequency-Separated Strategy for the Integration of Different Types of Electric Vehicles into Grid Frequency Regulation	Yufeng Guo, Dongrui Zhang, Yan Shen

PO098	0289	Evaluation of Wind Power Operating Capacity Credit Considering Prediction Error	Yanxin Song, Shuang Han, Tonghui Qu, Yongqian Liu, Jie Yan, Li Li
PO099	0291	Partial Discharge Analysis of Insulators in Transmission Lines in Coastal Heavy Pollution Areas	Q F Wen, L J Li, X G Xi, Z J Li, X G Wang, C Zhang, H Wang
PO100	0295	Robust Decentralized Coordinated Controller Design Considering Uncertainties of Wind Power	S Y Xu, L Gao, B Zhao, J T Bi, S H Fang, Y H Jiang, L J Chen
PO101	0299	Cluster Control Research of DC-type Distributed Generations Based on Multi-microgrids Technology DC Distribution System	Xiong Xiong, Ji Yu, Zhang Ying, Ding Baodi, Wu Ming
PO102	0301	The detection method of wind turbine operation outliers based on multi-dimensional clustering	Y Q Liu, Q Liu, S Han, J Yan, L Li
PO103	0312	Comparison of Market-incentive Mechanisms Based on Peak Regulation Economy of Thermal Power Units	Yufeng Guo, Mengqi Pan, Xinlei Wang, Tong Xu, Xueqin Tian
PO104	0316	Optimal Scheduling Method for Wind Power Accommodation Based on Wind-Nuclear Coordination	J Wang, MZ Zhang, C Qiu, XC Li, YN Li
PO105	0321	A Novel Frequency Regulation Control Strategy Based on the External Characteristics of PV generation	Dan Wang, Gangui Yan, Qi Jia, Guoqing Zhou, Wenbo Hu
PO106	0332	A fitted model predictive control approach for real-time policy making of microgrid energy system	Wen Xiong, Li Wang, Fei Xiao, Qian Ai, Ying Cai, Junge Li, Shunqi Zeng, Yufan Zhang
PO107	0335	THE INFLUENCE OF POWER LOSS ON ASYNCHRONOUS GRID AND CALCULATION OF ASSEMBLE POWER	Yufeng Guo, Zuo Wang, Bo Li, Jianing Liu
PO108	0337	Analysis of Impact of Grounding-pole Current-limiting Reactor on Fault Detection of MMC based DC Grids	Saizhao Yang, Wang Xiang, Jinyu Wen
PO109	0348	Modeling and Application of Harmonic Transfer and Amplification Analysis of HVDC Transmission	D Liu, X H Li, Z X Cai
PO110	0350	Dynamic assessment method for reactive power of DFIG	Yongqian Liu, Fuxing Lai, Jie Yan, Fei Zhang, Zixin Chen
PO111	0352	Research on overcurrent suppression strategy of true bipolar MMC-HVDC single pole blocking bridge arm	Mengyan Ma, Yingbiao Li, Shanshan Wang, Panbo Yang, Lixia Zhang

PO112	0362	Research on Optimization Configuration of M-SMES in Micro-grid with Renewable Energy	M H Gao, J Shi, Y Y Li
PO113	0363	Multi-microgrid Coordinate Dispatching of Multi-time Scale Source-load Supply and Demand Interaction Based on Master-slave Game Theory	G Y Mei, J X Gong
PO114	0367	Application and comparison of two heat-electricity ratio regulation modes in regional integrated energy systems.	Liyang Liu, Gengyin Li, Ming Zhou
PO115	0369	Anomaly Detection for Power System Forecasting Under Data Corruption Based on Variational Auto-encoder	Ruicheng Zheng, Jie Gu
PO116	0373	An Application of Marshall-Edgeworth Spot Price Index in Wind-Thermal Generation Swap Option Pricing	Zhixiong Hu, Ming Zhou, Zhiming Jiang, Yan Zhang, Xiaojuan Liu
PO117	0377	Improved Power Flow Calculation of Active Power Distribution Network with Distributed Generation	Hong Fan, Keke YU, Zichao Liu, Haijun Xing, Shuqing Zhang
PO118	0379	Low-Carbon Power System Economic Dispatch Considering Renewable Energy Accommodation	Y T Xu, T Ding, M Qu, Y Wen, Y Ning
PO119	0381	MILP Model for Annual Power and Energy Balance of Hydro-thermal-wind Power System Considering RPS Mechanism	D Zhao, W Yan, C Luo, T Luo
PO120	0383	A fault-tolerant method of the second-use batteries at an energy storage power station	Qingshan Wang, Yan Li, Qun Zhang, Xi Chen
PO121	0385	Analysis on Capacitance Rise of 500kV XLPE submarine cable in AC Voltage Withstand Test	YANG Yong, JIN Yongtao, LI Te, ZHAO Lin, YU Bing
PO122	0389	An Improved Droop Control Strategy with Double Compensation for DC Microgrid	Y W Gu, F Wang, S S Zhu, Y F Li, H Guo
PO245	0688	Transient Stability Assessment for Inverter-Interfaced Distributed Generators by Using Energy Function	Xinze Xi, Moduo Yu, Mingqin Zhang, Wentao Huang, Nengling Tai

## Poster Presentation Day Two

09:00 – 17:00 | 25<sup>th</sup> Oct 2019 | 2<sup>nd</sup> & 3<sup>rd</sup> floor Foyer

Poster ID	Paper ID	Title	Author(s)
PO123	0390	Decentralized self-balancing control strategy for the optimal operation of energy storage systems in network	JUNTAO FEI, XIAODONG YUAN, QINGQIANG XU, SHUIFU GU, WENBO CHEN
PO124	0401	The Small Signal Stability Analysis of DC Distribution Network	Changli Shi, tongzhen Wei, Qunhai Huo, Tongshuo Zhang, Junqiang He
PO125	0409	OPTIMIZED EIGHT VECTOR SPACE BASED CONVERTER FAULT TOLERANCE CONTROL FOR PMSG WIND TURBINE	Chao Sun, Yingning Qiu, Wei Qin, Yanhui Feng, Kai Huang, Waseem Muhammad
PO126	0416	Angular Sampling of Wind Turbine Low Speed Shaft Using High Resolution Magnetic Keyphasor	Guangyuan Huang, Yanhui Feng, Ming Ren, Yingning Qiu, Wenxian Yang
PO127	0419	Multi-objective planning of distributed generations based on time-sequence characteristics	R J Cui, H Hou, Z F Xiao, P Z Xin, X T Deng, P Liu, T Xu
PO128	0421	A data-driven method for detection and localization of weak fault based on synchronized phasor measurements	H X Wang, B Wang, D L Zhu, L M Zhang, X Y Wang, G Lin
PO129	0424	A Predictive Control Method for Suppressing the Continuous Commutation Failure of LCC-Based HVDC System	Zhen Zhang, Xiao Chao, Jinxin Ouyang
PO130	0430	An optimal volt/var control strategy for an islanded microgrid considering the volt/var control capability	Z Chen, Z B Du, H Q Zhan
PO131	0431	Real time coordinated optimization dispatch model for AC/DC hybrid distribution network	Y H Huang, R F Zhang, D L, Q S L, X Y T
PO132	0432	Three-phase Steady-state Type-3 and Type-4 Wind Turbine Generators Model and Impacts on PCC Voltage Unbalance	Can Chen, Hui Lliu, Linlin Wu, YUNTAO JU, Xiaoyang Deng
PO133	0433	Active distribution network state estimation algorithm based on decision tree of self-identification.	J Ding, C L Ma, B Fu, B Liu
PO134	0434	Dynamic Var Planning in Large Hybrid AC/DC Receiving-end Grid under Large Scale Renewables Accessing Conditions	T Luo, K Wang, G Li, C Luo



PO135	0435	Load Forecasting Model and Day-ahead Operation Strategy for City-located EV Quick Charging Stations	Z Liu, Y Xie, D Feng, Y Zhou, S Shi, C Fang
PO136	0436	Research on Index System and Comprehensive Evaluation Method of China's Electricity Spot Market	X Li, Y Wu, Z Zhao, Y Liu, P Xie, J Zou, P Xuan, J Zhu, L Huang
PO137	0440	Tie-line power transmission control for micro-grid with multi-parallel connected inverters based on Lyapunov function	Peng Xu, Keyou Wang, Xin Huang, Chunling Wang
PO138	0448	A novel linear battery energy storage system (BESS) life loss calculation model for BESS-integrated wind farm in scheduled power tracking	Q Gui, H Su, D Feng, Y Zhou, R Xu, T Lei
PO139	0449	Study on Primary Frequency Regulation Strategy of Energy Storage in Photovoltaic Power Station	wenwen sun, chunhui qu, yanxia sun, jingli li, rui song
PO140	0462	A Joint Clearing Model of Energy and Auxiliary Service Market Considering Flexible Load	X Zhang, Y Bai, G Sun, J Zou, P Xuan, P Xie, B Zhou, J Zhu
PO141	0464	Study on Coordinated Control Strategy of Offshore Wind Farm Integration System via MMC-HVDC Based on Transient Response Characteristic Analysis	Xiaojie Fan, Yongqiang Zhu, Chao Liu, Yan Li
PO142	0473	Analysis of Influence on Branching Factor of AC Grid Based on Characteristics of Grid-side Inverter	Ning Huang, Chunju Fan, Shan Jiang
PO143	0475	Optimal power flow for AC and DC grids based on power electronic transformer	Qi Geng, Yan Hu
PO144	0479	A review of research on subsynchronous resonance of wind power	YU CHEN, YUN WANG
PO145	0481	A New Model of CCHP system with various new energy integration	Y Zhipeng, Z Feng, L Guojie
PO146	0486	Stability Analysis of Electrical Oscillation Existing in Grid Integration of PMSG-based Wind Farm with VSC-HVDC System	K Sun, W Yao, J Wen
PO147	0488	Research on Regulation Compensation Allocation Method of Virtual Power Plant	J L Yang, J B Li, M X Guo, Y C Huang, A L Pang, Y Ji
PO148	0490	Research on Uncertain Risk Prevention Strategy of Virtual Power Plant	J L Yang, J B Li, F Fei, H Q Wang, C Yang, W D Qiao
PO149	0493	Study on Angle Stability and Critical Penetration of Power System With High Proportion Wind Power	X Zhang, Y Z Huang, P Wu

PO150	0511	Cooperative Scheduling Strategy of Distributed Energy Storage System in Regional Grid with High Proportion of Renewable Energy	Rui Ma, Wenqi Li, Xuecui Jia, Xianjun Li, Yufei Rao, Zhaohui Li
PO151	0512	A Mechanism of Regional Reserve Market for Promoting Large-scale Renewable Energy Consumption	JIN ZOU, PEIZHENG XUAN, PINGPING XIE, BAORONG ZHOU, JIZHONG ZHU
PO152	0514	Feasibility Study on Energy Storage Replacing External Power Supply Based on Sequential Operating Simulation Method	Yi Ge, Linyuan Wang, Yue He, Bingjie Li, Junhui Huang
PO153	0515	Research on Control Strategy of PQ Mode Virtual Synchronous Generator with Autonomous Voltage Regulation Function	J J Wang, J B Liu, D Z Li
PO154	0516	Optimal Bidding Strategy for Wind Farms in Electric Spot Market	JIN ZOU, PEIZHENG XUAN, PINGPING XIE, BAORONG ZHOU, JIZHONG ZHU
PO155	0517	Control Strategy of Cascaded H-bridge Grid-connected Photovoltaic System without PLL in the Static Coordinate	Lixia Zhang, Jiayu He, Bing Zhao, Han Gao, Wei Kang
PO156	0518	Bi-level Multi Time-scale Voltage/Var Optimization and Control in a Hybrid Distribution Network	Feng Qiao, Jin Ma, Yaran Li
PO157	0524	Isolated Microgrid voltage regulation using fuzzy-logic based inverter control	Arvind R. Singh, Lei Ding, Abhishek Kumar, Mostafa Kheshti, Ranjay Singh, Ramesh Bansal
PO158	0527	An Improved Adaptive Nonlinear Droop Control Method in DC Microgrid	Yaoyao Zhang, Maodong Tang, Xiaohui Qu, Wu Chen
PO159	0531	Review of Abnormal Data Identification and Correction Techniques in Active Distribution Networks	Shu Liu, Zhiyu Zhang, Xiangjing Su, Yan Song, Shuxin Tian
PO160	0535	Hierarchical Decomposition Based Distributed Energy Management of Distribution Networks	Y Su, Z Wang, F Liu, P Yang, Y Zhang, M Jia
PO161	0536	$\mu$ PMU Based Intelligent Distribution Networks Evaluation by Analytic Network Process and Improved Entropy Weight Methods	Zhixiong Shi, Longhai Guo, Xiangjing Su, Jinsong Liu, Shuxin Tian
PO162	0537	Stability measurement of DC Distributed Power System	Yang Li, Guoqing He, Haijiao Wang, Xing Zhang
PO163	0548	Complementary and Coordinated Optimal Dispatch Solution for Hybrid Thermal-Wind-PV Power Grid with Energy Storage	Haixin Wang, L Shi, Yixin Ni

PO164	0550	The Real-time Optimization of Active Distribution System Based on Deep Deterministic Policy Gradient	Jinxia GONG, Guangyin MEI, Yanmin LIU
PO165	0551	Multilevel Comprehensive Operation Risk Assessment of Active Distribution Network Based on PMU	Jian ZHOU, Shuxin TIAN, Chao SIMA, Yan SONG, Yang FU, Shu LIU
PO166	0554	Research on the joint planning and benefit allocation of distribution networks under the environment of incremental distribution business liberalization	Wenjuan Niu, Shaodong Liu, Hu Li, Ciwei Gao, Haiwen Shao
PO167	0558	Negative Resistance Effect Induced by Network Dynamics in Power-Electronic-Based Power Systems: A Simple Case Study	Q Yue, J Yu, M Zhan
PO168	0559	Integrated modelling and planning of regional integrated energy systems based on exergy analysis	Xiao Hu, Ce Shang, Min Wen, Li Wang, Yuquan Liu, Feng Zhang, Haozhong Cheng
PO169	0562	U.S. Green Power Market Experience and Its Enlightenment to China	XN Ye, CX Wang, ZQ Li, W Yuan
PO170	0570	Research on the Control Strategy of Energy Storage System in Photovoltaic Power Station	D J Jiang, F B Wu, C Q Wang, L Wang, D W Zhao
PO171	0573	Reliability evaluation of power system with photovoltaic generation based on multilevel cross entropy method	Zifan Shi, Wei He, Jie Shi, Fan Chen, Han Miao, Zhongyi Qian, Ziheng Zhang, Letao Zhang
PO172	0577	Efficiency and benefit evaluation of multi-energy microgrid considering multi-type heat pump	Qiang Sun, Weizhen Yong, Qian Chen, Jingdong Wei, Chanxia Zhu
PO173	0580	A Two-layer Control Method for Inverter ACs to Provide Frequency Regulation Service Based on Indoor Temperature-Varying Model	Kaiwen Zeng, Jianing Liu, Lingling Le, Menglin Zhang, Xiaomeng Ai
PO174	0585	Optimal Contract Electricity of Wind-thermal Hybrid Power Plant in Forward Market	Yongqing Wang, Zhengting Jiang, Minghui Zhu, Lei Zhou, Pei Zhang
PO175	0589	An IES Comprehensive Profit Model Based On Improved PSO Algorithm	Chen Chen, Bingjie Li, Wei Zhang, Hongda Zhao, Ciwei Gao, Deng Pan
PO176	0594	Data-driven combining forecasting method for the net demand of power retailers in distribution network	Zelong Lu, Tianhui Zhao, Yao Zhang, Jianxue Wang
PO177	0595	Equilibrium Strategy of Regional Integrated Energy System Based on Stackelberg Game Theory	Chen Qing, Yan Hu, Nengling Tai, XinXing Xu

PO178	0604	Analysis on Fault Characteristic of Metallic Return in True Bipolar VSC-HVDC Transmission System	Panbo YANG, Shanshan WANG, Yuanyuan SUN, Bing ZHAO, Yingbiao LI, Rui YIN, Mengyan MA
PO179	0605	Study for Mitigating Scour around the Monopile Foundations of Offshore Wind Turbines	Kexiang wei, Wenxiang yang, Bo yang, Bo qin
PO180	0611	An Intelligent Implementation of Improved Nonlinear Droop Control Scheme in MTDC Networks Using Fuzzy Search	Feng Li, Jiebei Zhu, Grain Adam, Yingshu Liu, Yunsong Yan, Mingying Li, Ning Sun
PO181	0620	DC Grid Based on Hybrid MMC and Fast Vacuum Switch	Pucheng Cai, Meng Zhou, Wang Xiang, Binye Ni, Wenping Zuo, Jinyu Wen
PO182	0623	Leakage Current Suppression and Common-Mode Resonance Active Damping for LCCL-Filtered Transformerless Three-Phase PV Inverter	Cun Wang, Rende Zhao, Poh Chiang Loh, Hailiang Xu, Qingzeng Yan
PO183	0633	Island Partitioning Method for Active Distribution Network Considering Adjustable Load	Jian Zhou, Kunpeng Li, Shuxin Tian, Ran Chen, Xiaoxu Wang, Shu Liu, Yang Fu
PO184	0635	Finite control set model predictive control strategy of grid simulator for the test of renewable energy system and motor driver	Tao Liu, Zhaoxia Xiao
PO185	0638	Distributed Generations Interconnection Based on the Clustering Algorithm and Graphy Theory	Tianling Shi, Fei Wang, Hui Guo, Lijun Zhang, Li Li
PO186	0649	Medium and long-term power market risk assessment and comprehensive evaluation	Minghui Zhu, Yufeng Jiang, Xiang Yu, Lei Zhou, Meng Shi
PO187	0651	Performance assessment of wind turbine pitch systems based on multi-dimensional indicators	L Wei, Z Qian, J Wang, L Cao, F Zhang
PO188	0654	A Mult-Resolution Interface Model of Combined Shifted Frequency Phasor and Electromagnetic Transient Simulations for Statcoms AC/DC Grids	Yupeng Li, Qiongfeng Zhu, Dewu Shu, Jinping Zhang
PO189	0655	Method for determining the minimum number of power-on units at the transmitting end of UHVDC considering transient over-voltage	Tiezhu Wang, Shicong Ma, Mengjun Wang, Xi Zhang, Xianbo Ke, Jili Wang, Chao Huo, Gang Zhang
PO190	0656	Machine Side DC-port Impedance Modeling and Characteristic Analysis of PMSG Wind Turbines	Bin Liu, Guanghui Li, Zhen Li, Xiangdong Liu, Jiajun Wang

PO191	0657	An Improved Hybrid Modulation Strategy for Cascaded H-Bridge Photovoltaic Inverters	Rumeng Song, Rende Zhao, Hailiang Xu, Congcong Xuan, Cheng Yuan
PO192	0660	Research on Distribution Network PMU Configuration Scheme Based on Parameter Estimation Accuracy	Chen Fang, Ping Ling, Tianyu Fang, Yanruo Hou, Hengxu Zhang, Fang Shi
PO193	0664	Method of T-connection line parameter estimation in distribution network based on PMU measurement data	Shu Liu, Jinsong Liu, Yanruo Hou, Tianyu Fang, Hengxu Zhang, Fang Shi
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