



**IEEE PES Asia-Pacific Power and Energy  
Engineering Conference  
15-18 November 2015  
Brisbane, Queensland, Australia**





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## MESSAGE FROM THE CO-CHAIRS


On behalf of the organising committee we have great pleasure in welcoming you to a most stimulating and worthwhile conference. This will be the first time that the IEEE Power & Energy Society, Asia Pacific Region has held its annual Power & Energy Engineering Conference in Australia. We received a very positive response from the authors around the region with some 326 full papers submitted. After a blind peer review process, 279 papers have been accepted, from which 258 papers will be presented at the conference.

Many leading power engineering researchers and industry practitioners will be presenting and discussing the latest developments on emerging issues of critical importance to the electric power industry. It is also pleasing to see the significant attendance from the student communities, who are most welcome. Authors and delegates are coming from 16 countries from all the continents, with almost 100 participants from China. We hope our international delegates will enjoy the beautiful spring season of Queensland and will explore the major tourist destinations either before or after the conference.

We have received strong support from the Queensland industry, which includes a Gold sponsorship from Noja Power, Silver sponsorships from Energex and Ergon Energy and a Bronze sponsorship from Powerlink Queensland. Two special paper's awards were kindly donated by the Australian Power Institute and CIGRE Australia. Thanks to all our sponsors for their generous support.

We are thankful to IEEE PES President Prof. Miroslav Begovic, IEEE PES President-Elect Dr. Damir Novosel, IEEE PES Executive Director Mr. Pat Ryan and IEEE PES R-10 representative Prof. Lalit Goel for their support and participation during the conference. Our local PES community is looking forward to welcoming the IEEE PES delegates.

A number of CEO's and senior power industry executives are participating in the conference as plenary speakers. We appreciate their time, commitment and support for the conference. We are organising three site visits to provide delegates with insight into power industry practices "down



under” and trust that you will enjoy these experiences. Thanks to the University of Queensland for allowing the delegates to visit their 3.3 MW Solar farm at Gatton Campus, which is a truly a world class research facility. Thanks to Noja Power for hosting an inspection of their switchgear manufacturing plant in Brisbane and also to the Australian Energy Market Operator for showing delegates their National Electricity Market control centre at Mansfield.

A large conference like this needs extensive planning and preparations, which have been co-ordinated by an energetic local organising committee from three Brisbane universities (The University of Queensland, Queensland University of Technology & Griffith University) together with industry volunteers from Energex and Australian Energy Market Operator. Their tireless efforts over the last six months are much appreciated and underpin what is planned to be an enjoyable and stimulating conference for all participants. They have been ably supported by a team of volunteer university graduate students who have assisted with detailed preparations and running the conference activities and answering any questions. You can recognise them working hard at the conference wearing navy blue shirts.

The IEEE Queensland Section and Joint Chapter of IEEE PES & DEIS are providing all support for the conference. Thanks to the Section and Chapter level committees. Brisbane Convention and Exhibition Centre is the premier conference venue in Brisbane and their staffs have been supporting us throughout the organisational process. Arinex is our conference organiser and they have been wonderful in providing all support towards the registration and related service. We recognise their support and thanks to both Arinex and BCEC staff. Finally, we trust that conference delegates will enjoy our hospitality and take home favourable memories of their visit to Brisbane.

**Prof. Tapan K Saha & Prof. Gerard Ledwich,**

**IEEE PES APPEEC-2015 Co-Chairs**



## ORGANIZING COMMITTEE

***Conference Co-Chairs:***

T. K. Saha, The University of Queensland

G. Ledwich, Queensland University of Technology

***Conference Vice Chair:***

C. Ekanayake, Griffith University

***Technical Program Chair:***

N Modi, Australian Energy Market Operator

***Technical Program Co-Chair:***

Y. Mishra, Queensland University of Technology

***Secretary:***

D. Eghbal, Energex

***Publication Chair:***

N. Mithulananthan, The University of Queensland

***Treasurer:***

R. Yan, The University of Queensland

***Webmaster:***

D. Martin, The University of Queensland

J. Hossain, Griffith University

***Industry Engagement Chair:***

S. Bartlett, The University of Queensland



## GENERAL INFORMATION

### Conference Venue

#### **Brisbane Convention & Exhibition Centre**

Sunday, 15<sup>th</sup> November 2015 – Wednesday, 18<sup>th</sup> November 2015

Brisbane Convention & Exhibition Centre is located in the unique riverside precinct of South Bank, Brisbane home to over 50 restaurants, cafes and bars, stylish shops, performing arts theatres and art culture including Australia's newest and largest Gallery of Modern Art.

There are two major hotels located adjacent to the Centre and 27 hotels in two kilometres radius with easy and frequent conveyance to the conference venue. Visit the [Accommodation](#) page of BCEC website for directory.

The Centre is a transport hub for trains, buses and the city's high speed CityCats and provides undercover parking for 1500 vehicles with direct access to convention facilities.

Best access to the IEEE PES APPEEC 2015 conference is via the Merivale Street Main Entrance and directly up the lift, to the Plaza Level

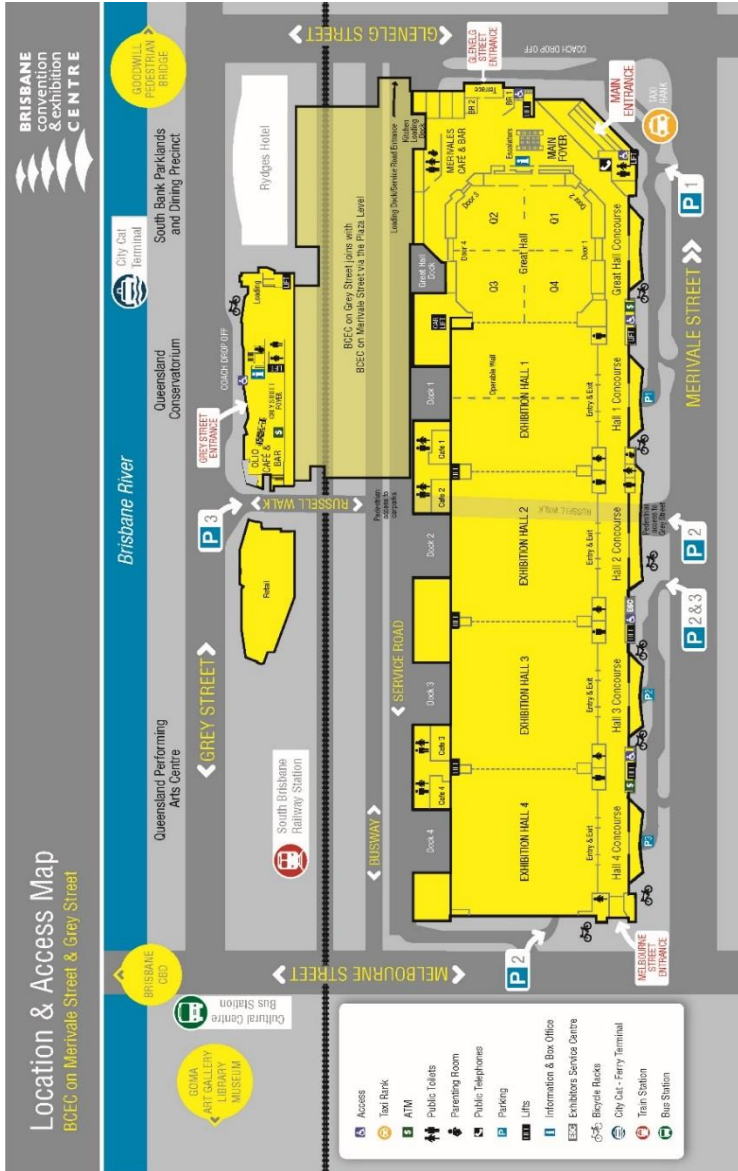
For more information on attending an event at BCEC [visit the website](#) or download the BCEC Live app, available for [apple](#) and [android](#) devices.

#### **Emergency Contacts ( 紧急联系人 ):**

1. **Dr. Ruifeng Yan ( 闫瑞峰 ) : +61421 033 652**
2. **Prof. Tapan Kumar Saha : +61422 001 378**

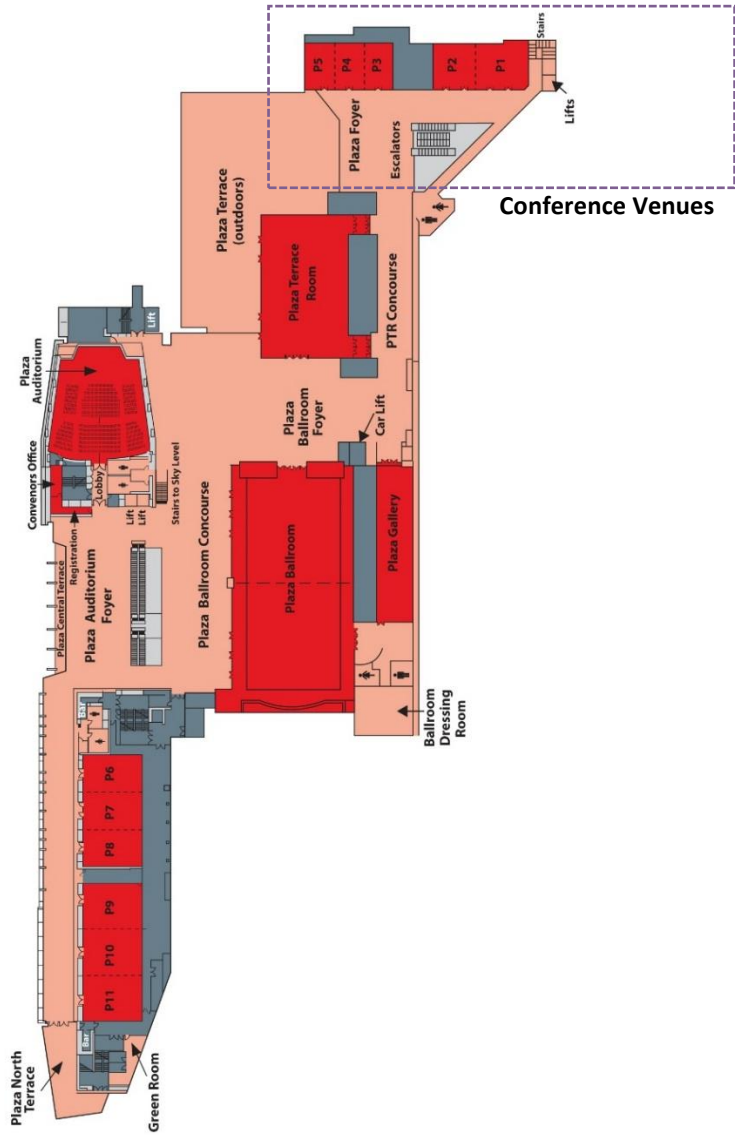


# Location and Access Map of Brisbane Convention & Exhibition Centre





# Plaza Level Floorplan of Brisbane Convention & Exhibition Centre





## Dinner

### City Lights Dinner Cruise – Kookaburra Queen

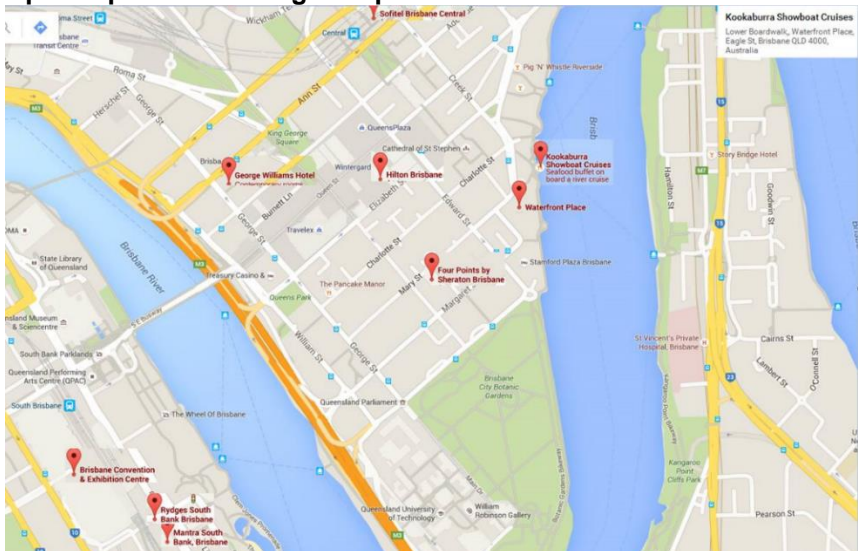
Date : Tuesday, 17<sup>th</sup> November 2015  
Boarding time : 18:30  
Departure time : 19:00  
Duration : 4 hrs

Experience the city lights, under the stars, from the iconic Kookaburra Queen paddle wheelers with the Dinner Cruises Brisbane! Departing from Eagle Street Pier, it will head out for the first of many perfect photo opportunities along the Brisbane River.

Enjoy the sights as it leisurely cruises past the beautiful botanic gardens, kangaroo point cliffs, maritime museum, Southbank precinct, the Brisbane wheel and many more of the city's sensational attractions.


A sure scenery highlight would have to be the iconic Story Bridge - a heritage-listed steel cantilever bridge that connects the north and south of Brisbane.

### Map: Adapted from Google Map



### Transport:

Pick-up: Buses will start from the Brisbane Convention and Exhibition Centre at 18:30 for the Waterfront Place, Eagle Street. Attendees boarding from BCEC are requested to stand outside the centre ready for boarding at



18:15. Also, buses will be arranged to pick up the guests from the city hotels. Guests are requested to be ready at the pickup points outside their hotels at 18:15. (*Advice the registration desk about your pickup hotel in the city*)

Drop-off: Buses will be arranged to drop the guests at their hotels after the event finishes at about 23:00.



## PROGRAM AT A GLANCE

<b>Sunday, 15<sup>th</sup> November</b>	
16:00 -18:00	Registration <i>Venue: BCEC Plaza Level Foyer P3-P5</i>
18:00 -20:00	Cocktail Reception <i>Venue: BCEC Plaza Level Foyer P3-P5</i>
<b>Monday, 16<sup>th</sup> November</b>	
08:30 -09:00	Registration
09:00 -10:00	<p><b>Opening Ceremony Keynote session</b> <i>Venue: BCEC Plaza Level Foyer P3-P5</i> <b>Welcoming:</b> Prof. Tapan Kumar Saha, Co-Chairs</p> <p><b>Opening Ceremony :</b> Prof. Miroslav Begovic, (IEEE PES President &amp; Head, Electrical and Computer Technology, Texas A&amp;M University, USA)</p> <p><b>Keynote Speech: "Learning from the Past Going into the Future"</b>, Dr. Damir Novosel, (IEEE PES President-Elect &amp; President, Quanta Technology LLC)</p>
10:00 -10:30	Morning Tea
10:30 -12:30	<p><b>Plenary Session I</b> <b>Theme: Power Industry Challenges and the Need to Innovate</b> <i>Venue: Main Conference Room BCEC Plaza Level Foyer</i></p> <p>Moderator: Prof. Miroslav Begovic, (IEEE PES President &amp; Head, Elect. &amp; Comp. Tech., Texas A&amp;M University, USA) Panellists: Mr. Terry Effenev (CEO, Energex, Australia), Mr. Mike Cleary (COO, AEMO, Australia), Mr. Peter McIntyre (Managing Director, TransGrid, Australia), Prof. Paul Simshauser , Director General , Dept of Energy &amp; Water Supply, Queensland Government &amp; Prof. of Economics (Griffith University)</p> <p><b>CIGRE - NGN and API award presentation</b> Mr. Terry Killen (Executive Manager, CIGRE Australia) Mr. Mike Griffin (CEO, Australian Power Institute) Vote of Thanks: Prof. Gerald Ledwich</p>
12:30 -13:30	Lunch

13:30 -15:30	Session 1 (room P3) Presentation	Session 2 (room P4) Presentation	Session 3 (room P5) Presentation	
15:30 -16:00	Afternoon Tea			
16:00 -17:30	Session 4 (room P3) Presentation	Session 5 (room P4) Presentation	Session 6 (room P5) Presentation	
18:00 -19:30	<b>IEEE PES Student/YP, WIE Program (Room P3)</b>			
<b>Tuesday, 17<sup>th</sup> November</b>				
08:30 -09:00	Registration <i>Venue: BCEC Plaza Level Foyer P3-P5</i>			
09:00 -10:30	<p style="text-align: center;"><b>Plenary Session II</b>  <b>Theme: New Directions and Technologies for Future Power Systems</b>  <i>Venue: Main Conference Room BCEC Plaza Level Foyer</i></p> <p style="text-align: center;">Moderator: Mr. Peter Price (EGM, Energex, Australia)  Panellists: Mr. Stephen Richardson, (Tech. and Innovation Engineer, Ergon Energy, Australia ( )  Dr. Stuart Johnston (Executive Director, Assets and Network Transformation, ENA, Australia)  Dr. Perry Sioshansi (President, Menlo Energy Economics, USA)</p>			
10:30 -11:00	Morning Tea			
11:00 -12:30	Session 1 (room P3) Paper Forum	Session 2 (room P4) Paper Forum	Session 3 (room P5) Paper Forum	Session 10 (room P2) Poster
12:30 -13:30	Lunch			
13:30 -15:30	Session 4 (room P3) Paper Forum	Session 5 (room P4) Paper Forum	Session 6 (room P5) Paper Forum	Session 11 (room P2) Poster
15:30 -16:00	Afternoon Tea			
16:00 -17:30	Session 7 (room P3) Paper Forum	Session 8 (room P4) Paper Forum	Session 9 (room P5) Paper Forum	Session 12 (room P2) Poster
19:00 -21:30	<b>Conference Banquet</b> <i>Venue: Kookaburra Cruise</i>			



<b>Wednesday, 18<sup>th</sup> November</b>			
08:30 -10:30	Session 1 (room P3) Presentation	Session 2 (room P4) Presentation	Session 3 (room P5) Presentation
10:30 -11:00	Morning Tea		
11:00 -12:30	Session 4 (room P3) Presentation	Session 5 (room P4) Presentation	Session 6 (room P5) Presentation
12:30 -13:30	Lunch		
14:00 -18:00	<b>Technical Tours</b> <i>Pick up from BCEC at 14:00</i>		

## OPENING/ KEYNOTE/ PLENARIES

**Monday, 16th November, 9:00 to 10:00 Plaza level P3-P5**

**WELCOME:**

Prof. Tapan Saha

**OPENING:**

Prof. Miroslav Begovic  
**IEEE PES President**

**KEYNOTE: LEARNING FROM THE PAST GOING INTO THE FUTURE**

Dr. Damir Novosel

**IEEE PES President-Elect President, Quanta Technology Llc**

Reliable and efficient electrical grid operation is critical to society. Electrical utility industry has been experiencing significant changes in the last decade caused by new technology trends, environmental drivers and weather patterns, changing public needs, and regulatory requirements. The electrical power and energy industry in the next decades will be different than it is today to meet the demands of the society and address challenges. We are at a crossroads in making business and technical decisions that will allow us to optimally and cost-effectively manage the grid.

The presentation will address how electrical grid developed since the first electric power plant, what some of the challenges and opportunities facing modern grids are, and how industry trends and innovation will shape the future grid. Topics discussed are:

- Asset management, including grid hardening and reliability improvements
- Distributed energy resources, microgrids, renewable intermittency and the role of storage
- Integration of electric vehicles to the grid
- Smart city trends
- Wide area monitoring, protection, and control
- Education and workforce needs
- Summary of key success factors to prepare for the grid of the future.

It will also address how IEEE provides technical leadership by tapping volunteers to offer an unbiased and independent service to the industry, benefiting from synergies between private and public sectors (utilities,

vendors, academia, national labs, regulatory organizations, and other industry participants).

**Prof. Miroslav Begovic**  
**IEEE PES President & Head, Electrical and Computer Technology, Texas A&M University, USA**

Prof Miroslav Begovic has a PhD in Electrical Engineering from Virginia Polytechnic Institute and State University. He is currently Electrical and Computer Engineering Department Head and Carolyn S. & Tommie E. Lohman '59 Professor at the f Texas A & M University. He is an IEEE Fellow and is the President of IEEE PES. His research interests lie in wide area monitoring, protection and emergency control using smart grid apparatus; sustainable and resilient energy infrastructures; and managing large assets in energy infrastructure.



**Dr. Damir Novosel**  
**IEEE PES President Elect , Quanta Technology LLC**

Damir Novosel (SM 1994, F 2003) is president of Quanta Technology, a subsidiary of Quanta Services, a Fortune 500 company. Previously, he was vice president of ABB Automation Products and president of KEMA T&D US. He has led development and implementation of a number of pioneering concepts, methods, and products that improved reliability and efficiency of power grids.

Damir is elected to National Academy of Engineers in 2014. Dr. Novosel is IEEE PES President Elect. He served as chair of the PES Technical Council, Vice President of Technology, and a member of the PES Governing Board from 2010 to 2012. Damir is also member of the CIGRE US National Committee.

Damir holds 16 US and international patents and published over 150 publications in Transactions, Journals and Proceedings, receiving PES 2011 and 2013 Prize Paper Awards. He has led or participated in numerous IEEE standards, publications and other initiatives.

He holds PhD and MSc degrees in electrical engineering from Mississippi State University, where he was a Fulbright scholar, and the University of Zagreb, Croatia, respectively





## **PLENARY SESSION I - POWER INDUSTRY CHALLENGES AND THE NEED TO INNOVATE**

Monday, 16<sup>th</sup> November, 10:30 to 12:20 Plaza Level (P3-P5)

### **Current Industry Drivers and Issues**

Leaders from the Queensland Government, New South Wales Transmission, South East Queensland Distribution and the Australian Electricity Market Operator will present for 20 minutes each on the drivers and significant challenges facing their sector of the power industry and the role of innovation and new technologies to help deliver the power system of the future. This will be followed by 30 minutes of panel discussions, questions and answers led by the session moderator Prof. Miroslav Begovic, President of the IEEE Power and Energy Society.

#### **Prof. Paul Simshauser**

**Director-General, Department of Energy & Water Supply, Queensland Gov.**

Paul Simshauser was appointed Director-General of the Department of Energy and Water Supply in July 2015. Prior to that, Paul was AGL Energy's Chief Economist. He has also held senior executive positions at Stanwell Corporation, NewGen Power and Babcock & Brown.

Paul holds Bachelor Degrees in Economics and in Commerce, has a Master's Degree in Accounting & Finance, and a PhD in Economics. He is an FCPA and a Fellow of the Australian Institute of Company directors. He is also Professor of Economics at Griffith University's Business School, and is widely published on energy economics in academic journals.



#### **Mr. Peter McIntyre**

**Executive and Managing Director, TransGrid**

Mr Peter McIntyre was appointed to the TransGrid Board on 27 April 2010. With more than 30 years' experience in the electricity transmission industry, Peter has expertise in policy development, asset management and regulatory strategy. Before his appointment as Managing Director, Peter



held three executive positions within TransGrid including General Manager/System Operations, General Manager/Network Performance and General Manager/Network Development and Regulatory Affairs.

Peter is Deputy Chairman of the Energy Networks Association. He is also a Fellow of the Institution of Engineers Australia, a Fellow of the Australian Institute of Energy and a Fellow of the Australian Institute of Company Directors.

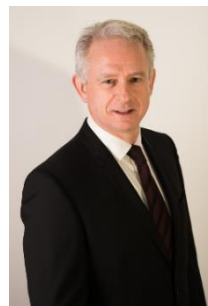
**Mr. Terry Effeney**  
**Chief Executive Officer, Energex**



Terry Effeney was appointed CEO of Energex in January 2007. Prior to joining Energex, Terry held the role of Chief Operating Officer (COO) of Ergon Energy and was an Executive Manager with Ergon Energy and its predecessor organisations for more than ten years. Terry has more than 30 years' experience in the energy industry, combining engineering and economics background with extensive operational management experience.

Terry is the immediate past Chairman of the Energy Networks Association (ENA) and is currently a Board Member and Chair of the ENA's Asset Management Committee.

**Mr. MIKE CLEARY**  
**Chief Operating Officer, Australian Energy Market Operator (AEMO)**



Originally from Ireland, Mike worked for the Electricity Supply Board and then as a consultant and senior manager in the energy industry for such firms as PJM Interconnection, Constellation Commodities Group, Powerex, Anadarko, Deloitte and Accenture.

Mike specialises in the field of system operations, energy market restructuring and reform, with a particular focus on the system/market operators that run these markets. Before joining AEMO, Mike was the Senior Vice-President and Chief Operating Officer of the Electric Reliability Council of Texas (ERCOT). He directed an extensive wholesale electricity market implementation and corporate turnaround program.





## PLENARY SESSION II - NEW DIRECTIONS AND TECHNOLOGIES FOR FUTURE POWER SYSTEMS

Tuesday, 17<sup>th</sup> November, 9.00 to 10.30 Plaza Level (P3-P5)

### **New Direction for Electricity Network Businesses and New Technologies**

A panel of local and international experts will present the transformational changes expected for the power systems of the future with customers empowered by solar PV, battery storage, EV's and smart devices. The implications for new technologies will be discussed as well as the experience with Australia's first grid connected battery storage systems that was justified economically in place of traditional network augmentations.

This will be followed by 20 minutes of panel discussions, questions and answers led by the session moderator Peter Price, Executive Manager Asset Management at ENERGEX.



### **Dr. Perry Sioshansi, President of Menlo Energy Economics, editor and publisher of *Energy Informer* (30 min)**

Dr. Perry Sioshansi has worked for Southern California Edison Company (SCE), the Electric Power Research Institute (EPRI), National Economic Research Associates (NERA), and most recently, Ventyx, now part of ABB.

He holds degrees in Engineering and Economics, including an MS and Ph.D. in Economics from Purdue University. He has edited and published a number of books on electricity markets, distributed generation and its implications for electric utilities.

Perry will be speaking about the evolution of electricity markets in USA and Europe and the new paradigms, new challenges and new approaches for traditional utility businesses in the rapidly evolving world of renewable generation, other distributed technologies, microgrids and energy efficiency.



**Dr. Stuart Johnston, Executive Director, Assets and Network Transformation, ENA (20 mins)**

Stuart's role at the Energy Networks Association (ENA) includes policy and advocacy on issues critical to asset management and managing transformational change for the industry. Stuart has diverse experience in the electricity industry, natural resources and university sectors.



He will provide an insight into the preliminary findings of the ENA/CSIRO Electricity Network Transformation Roadmap Project which will chart the pathway for electricity networks of the future and how Australia's network businesses must position themselves to succeed. It will identify the new services and technologies that future residential, commercial and industrial customers will value and that deliver long-term resilience and efficiency to Australia's energy system.

**Mr. Stephen Richardson, Technology Innovation Engineer, Ergon Energy (20 mins)**

Stephen's role at Ergon Energy is to develop, test and deploy cutting edge storage technologies and renewable energy systems to support customers and Ergon Energy's electricity network. He is particularly focused on supporting customers in rural and remote regions.



Being the Project Director and lead engineer for Ergon Energy's Grid Utility Support System (GUSS) Project, Stephen is rolling out 2MWh of energy storage to support the Single Wire Earth Return system (SWER). His presentation will cover

- New technologies investigated by Ergon Energy
- Importance of integration and control systems
- Challenges in integrating new technologies into the electricity network

**PARALLEL SESSIONS**

**Monday, 16<sup>th</sup> November**

**Session 1: MICROGRID IN POWER SYSTEM**

**Room: P3**

**Time: 13:30 – 15:30,  
Presentations**

**Chair: Prof. Arindam Ghosh, Curtin University**

- PES-APPEEC-093, Distributed Optimization for Generation Scheduling of Interconnected Microgrids**, Yansong Li; Nian Liu; Chenshuo Wu; Jianhua Zhang, China.
- PES-APPEEC-062, Comparison between DC and AC Microgrid Systems Considering Ratio of DC Load**, Kentaro Shimomachi; Ryoichi Hara; Hiroyuki Kita, Japan.
- PES-APPEEC-138, Interconnection of Islanded DC Microgrids**, Srayashi Konar; Arindam Ghosh, Australia.
- PES-APPEEC-094, Distribution Company and Microgrids Behaviour in Energy and Reserve Equilibrium**, Mohsen Parsa Moghaddam; Salah Bahramara; Mazyar Y. Damavandi; Mahmoud-Reza Haghifam, Iran.
- PES-APPEEC-223, Study on Business Continuity Capability by Cooperative Operation of Photovoltaic and Battery Energy Storage System**, Hiroki Maruyama; Hideo Ishii; Yasuhiro Hayash; Hajime Onojima; Yoshikane Kojima, Japan.
- PES-APPEEC-055, Capacity Configuration of Distributed Generation in Microgrid Considering the Correlation Among Wind Velocity, Light Intensity and Load**, Tao YAN; Wei TANG; Sheng XU; Yongxiang CAI; Hongtao FENG; Yuting WANG; Yue WANG, China.
- PES-APPEEC-119, Grid-independent Renewable Energy Solutions for Residential Use: The Case of an Off-grid House in Wellington, New Zealand**, Daniel Akinyele; Ramesh Rayudu; Nirmal Nair, New Zealand.

**Session 2: POWER TRANSFORMER**

**Room: P4**

**Time: 13:30 – 15:30,  
Presentations**

**Chair: Prof. Guan-Jun ZHANG, Xi'an Jiaotong University**

- PES-APPEEC-142, Laminated Cylindrical Model for Transformer Hotspot Temperature Calculation**, Shuaibing Li; Guangning Wu; Bo Gao, China.
- PES-APPEEC-023, A Priority Assessment Model for Distribution Transformers Replacement Decision-making**, Bin Jiang; Rong Li; Hongmei Li; Xin Shi; Lisheng Li; Linli Zhang, China.
- PES-APPEEC-240, Transformer Hot Spot Temperature Prediction Using a Hybrid Algorithm of Support Vector Regression and Information Granulation**, Yi Cui; Hui Ma; Tapan Saha, Australia.
- PES-APPEEC-134, Innovative Design & Manufacturing Techniques for Cost Effective & Superior Performance Power Transformers**, Suhail Aftab Qureshi; Azeem Talib; Uzma Amin; Ghulam Ahmad, Pakistan.

## Monday, 16<sup>th</sup> November

- PES-APPEEC-166, Oil Immersed and Dry type Transformer Comparison done with Finite Element Method of Matlab**, Uzma Amin; Suhail Aftab Qureshi; Azeem Talib; Ghulam Ahmad, Pakistan.
- PES-APPEEC-101, Effect of Pressboard Ageing on Power Transformer Mechanical Vibration Characteristics**, W.M.L.B. Naranpanawe; K.M.K.S. Bandara; T. K. Saha; C. Ekanayake; Pratheep Kumar Annamalai, Australia.
- PES-APPEEC-245, Using Power State Estimation to Calculate Hotspot Temperature of Distribution Transformers**, Judith Marks; Olav Krause; Daniel Martin; Donald McPhail, Australia.

### Session 3: POWER SYSTEMS PROTECTION

Room: P5

**Time: 13:30 – 15:30,  
Presentations**

**Chair: Prof. Lalit GOEL, Nanyang Technological University**

- PES-APPEEC-200, Research on Power System Fault Diagnosis Considering Relay Protection Condition Assessment**, ZHAO Dongmei; WANG Jian; ZHANG Xu; Liang Weichen, China.
- PES-APPEEC-003, A Centralized Protection and Control Scheme for Microgrid**, Meng Xu; Tingru Meng; Guibin Zou; Jian Zhang; Xia Lin; Jingjing Yang, China.
- PES-APPEEC-235, The Fault Diagnosis Method Research of the Intelligent Substation Considering the Multi-Source Information of the Primary and Secondary System**, Gao Zhanjun; Zhu Yi; Wang Tao, China.
- PES-APPEEC-221, Stochastic Analysis on the Effect of Fault Impedance and Fault Type to the Area of Vulnerability**, John Mark Napao; Christian Angelo Yap; Bryan Agustin; Jordan Rel Orillaza, Philippines.
- PES-APPEEC-243, UHV Grid Delamination and Partition Planning Method and Application Based on Short Circuit Current Coordination**, Xiaojun TANG; Yan XIE; Jing LI; Xuhui SHEN; Chunzheng TIAN, China.
- PES-APPEEC-225, Study on Mechanism and Protection Measures of Lightning Accident on Gas Station**, Danping Yan; Shi Yan; Linlin Xing; Liming Wang; Hailing Zhang; Min Gao; Di Qian; Zhen Qin, China.
- PES-APPEEC-074, DC fault analysis of VSC-HVDC and DC Cable Protection Principle**, Pu Zhao; Chen Qing; Hua Xing, China.
- PES-APPEEC-187, Proton Exchange Membrane Fuel Cell Protection Control for its Hybrid Power System Application**, Ya-Xiong Wang; Kai Ou; Fei-Fei Qin; Young-Bae Kim, South Korea.

### Session 4: RENEWABLE ENERGY AND POWER SYSTEMS Room: P3

**Time: 16:00-17:30,  
Presentations**

**Chair: Prof. Feng WU, Hohai University**

- PES-APPEEC-229, Study on the Mechanism of Transient Voltage Stability of Wind Power With Power Electronic Interface**, Lei Chen; Yuanhang Dai; Yong Min; Kaiyuan Hou, China
- PES-APPEEC-169, Optimal Combination of DG Technologies in Distribution Systems**, Karar Mahmoud; Naoto Yorino, Japan.

- PES-APPEEC-227, Study on Problems and Effects of Voltage and Reactive Power Control in Mass Introduction of Photo-Voltaic (PV) Generation towards Power System**, Mohammad Farhan Bin Mohd Fauzi; Sokna Sor; Aoki Hidenori, Japan.
- PES-APPEEC-208, Resonance Detection of Clustered Grid-connected Distributed Photovoltaic System Based on Wavelet Transform**, Peng Li; Jing Gao; Jian Sun; Cunping Wang; Hang Yu, China.
- PES-APPEEC-129, Impact of Load Frequency Dependence on Frequency Response of a Power System with High Non-Synchronous Penetration**, Nahid-Al-Masood; Ruifeng Yan; Tapan Kumar Saha; Nilesh Modi, Australia.
- PES-APPEEC-175, Optimization of Static Wind Power Investment in the Australian National Electricity Market**, Nadali Mahmoudi; Sebastian Forsyth; Tapan Saha, Australia.

Session 5: POWER ELECTRONICS

Room: P4

**Time: 16:00-17:30,**  
**Presentations**

**Chair: Prof. Dragan Jovcic, University of Aberdeen**

- PES-APPEEC-005, A Comparative Study of MPPT Algorithms for Standalone PV Systems under RCIC**, S.Z. Mirbagheri; M. Aldeen; S. Saha, Australia.
- PES-APPEEC-037, Advanced Microgrid Power Control through Grid Connected Inverters**, Dung H Pham; Gregory Hunter; Li Li; Jianguo Zhu, Australia.
- PES-APPEEC-054, Bidirectional Isolated Vehicle to Grid (V2G) System: An Optimized Implementation and Approach**, Seyedfoad Taghizadeh; M. J. Hossain; Junwei Lu, Australia.
- PES-APPEEC-036, A Two-Input Dual Active Bridge Converter for a Smart User Network Using Integrated Power Modules**, A. Burgio; D. Menniti; M. Motta; A. Pinnarelli; N. Sorrentino; P. Vizza, Italy.
- PES-APPEEC-033, A Systematic Approach of Resonant Tank Design for LLC Converters Implemented in Solar Photovoltaic Energy Storage Systems**, Wayne Water; Boyaun Zhu; Junwei Lu; Dale Butler, Australia.

Session 6: TRANSMISSION NETWORK

Room: P5

**Time: 16:00-17:30,**  
**Presentations**

**Chair: Mr Tim George, DigSilent**

- PES-APPEEC-234, The Dynamic Rating System for Transmission Lines Based on Thermal Circuit Model**, Yuehao Yan; Hui Lin; Weizheng Zhang; Zhengrong Li; Rui Tang, China.
- PES-APPEEC-125, Identification of Critical Lines in Power Grid Based on Electric Betweenness Entropy**, Zhenfan Yu; Shaowei Huang; Zhiyuan Ma; Gang Chen, China.
- PES-APPEEC-006, A Dual Three-Phase Induction Machine Based Flywheel Storage System Driven by Modular Multilevel Converters for AC Fault Ride Through in HVDC Systems**, M. I. Daoud; A. Massoud; A. Elserougi; A. Abdel-Khalik; S. Ahmed, Qatar.
- PES-APPEEC-257, Primary-secondary Control Strategy for Meshed HVDC Transmission Grids at Steady State**, Kalid Yunus; Torbjörn Thiringer, Sweden.



## **Monday, 16<sup>th</sup> November**

**PES-APPEEC-089, Direct Method for Computing Steady-State Response of VSC-HVDC,**  
Xia Yuan; Chongtao Li; Guiyuan Li; Zhengchun Du, China.

**PES-APPEEC-189, Reactive Power Control Operation Scheme of LCC-HVDC for  
Maximizing Shunt Capacitor Size in AC Systems,** Gyu-sub Lee; Seung-ill Moon; Rae-  
kyun Kim; Chan-ki Kim, Republic of Korea.

**Time: 11:00-12:30,  
Paper Forums**

**Chair: Mr Marcus Steel, Director, Renewable Electricity Micro-Grids Pty Ltd**

- PES-APPEEC-012, A New Approach for Optimal Allocation of Multiple SFCLs in a Power System with Distributed Generation**, Yu Zhao; Olav Krause; Tapan Saha, Australia.
- PES-APPEEC-236, The Impact of Interconnections on Reliability Contribution of Wind Farms**, Mehdi Mosadeghy; Ruifeng Yan; Tapan Saha, Australia.
- PES-APPEEC-133, Influence of Renewable Energy based Microgrid on Low Frequency Oscillation of Power Systems**, Awan Krismanto; Mithulananthan Nadarajah; Olav Krause, Australia.
- PES-APPEEC-254, Voltage security analysis with high PVs penetration considering the interaction of transmission and distribution grids: case studies**, Wenlu Zhao; Xincong Shi; Qinglai Guo; Hongbin Sun; Fengda Xu; Zhengshuo Li; Tao Niu; Bin Wang, China.
- PES-APPEEC-224, Study on Characterization of Photovoltaic Output and its Affections of Hydropower Consumption in Hydropower Rich Region**, Kaijiang Cao, China.
- PES-APPEEC-228, Wind-PV-Storage Optimal Environomic Design Using Multi-Objective Artificial Bee Colony**, Hossein Shayeghi; Mohammad Moradzadeh; Yashar Hashemi; Mehrdad Saif; Lieven Vandeveld, Belgium.
- PES-APPEEC-083, Determination of the Most Suitable Voltage Control Method Depending on Photovoltaic Installation Rate**, Satoru Akagu; Ryo Takahashi; Akihisa Kaneko; Masakazu Ito; Jun Yoshinaga; Yasuhiro Hayashi; Hiromi Konda, Japan.
- PES-APPEEC-182, Possible Impact of Large Scale Wind Energy Integration on Small Signal Stability**, Shanker Lamichhane; Mithulananthan Nadarajah, Australia.
- PES-APPEEC-106, Enhancing the Integration of Renewables by Trans-Border Electricity Trade in ASEAN**, Juergen Stich; Tobias Massier, Singapore.
- PES-APPEEC-115, Future high renewable electricity scenarios – Insights from mapping the diversity of near least cost portfolios**, Ben Elliston; Jenny Riesz, Australia.
- PES-APPEEC-253, Voltage Sag Compensation in Renewable Plant using Hydro-Pump storage**, Navid Aghanoori; M.A.S. Masoum, Australia.

**Time: 11:00-12:30,  
Paper Forums**

**Chair: Dr. Daniel Martin, University of Queensland**

- PES-APPEEC-135, Insulation Status Diagnosis of XLPE Cable Based on Polarization and Depolarization Current (PDC)**, Ai-Xuan Zhao; Xing Zhang; Shi-Yang Tao; Yan-Bo Wang; Lin-Lin Wu; Jun-Bo Deng; Guan-Jun Zhang, China.
- PES-APPEEC-076, Dependence of Partial discharge UHF Characteristics on Metal Particle Position at Insulating Spacer in GIS**, Xianjun Shao; Mingxiao Zhu; Wenlin He; Guan-Jun Zhang, China.

## Tuesday, 17<sup>th</sup> November

- PES-APPEEC-237, The Study on Vibration Characteristic of Power Transformer in Short Circuit by Transfer Function**, Fan Zhang; Shengchang Ji, China.
- PES-APPEEC-107, Estimation of Time Difference Between Partial Discharge UHF Signals Using Differential Energy Method**, Ming-Xiao Zhu; Jian-Yi Xue; Jia-Ning Zhang; Jun-Bo Deng; Hai-Bao Mu; Guan-Jun Zhang; An-Xiang Guo; Xiao-Wei Liu, China.
- PES-APPEEC-177, Partial Discharge Features and Parameters Characterization Under Typical Defect Geometries in Oil-Paper Insulation: Considering the Aging States**, Yuan Li; Guan-Jun Zhang; Ming-Xiao Zhu; Yan-hui Wei; Hai-Bao Mu; Jun-Bo Deng; Bin Wei, China.
- PES-APPEEC-088, Dielectric Performance of Silicone Oil-paper Composite Insulation System under Thermal Aging**, Li-Shuang Cao; Bin Xiang; Wen-Dong Li; Yan-Hui Wei; Jun-Bo Deng; Zhi-Yuan Liu; Satoru Yanabu; Ming Dong; Guan-Jun Zhang, China.
- PES-APPEEC-102, Effect of Rooftop-PV on Power Transformer Insulation and On-Load Tap Changer Operation, Light Intensity and Load**, D. Martin; T. Saha; O. Krause; Y. Cui; D. McPhail; T. MacArthur; D. Condon, Australia.
- PES-APPEEC-110, Field Studies on Comparing Techniques to Measure the Water Content of Power Transformer Insulation**, Daniel Martin; Tapan Saha; Matt Gibson; Gary Buckley; Steve Chinnarajan; Richard Dee; Gary Russell; Tony Gray; Ken Wyper; Robert Li; Kerry Williams, Australia.
- PES-APPEEC-103, Effects of Voltage Harmonics on Distribution Transformer Losses**, Toan Phung; Tinh Dao; Trevor Blackburn, Australia.
- PES-APPEEC-226, Study on Medium-frequency Transformer Isolated Substation**, Daming Zhang; Kazi Saiful Alam; Faz Rahman, Australia.

### Session 3: POWER SYSTEM STABILITY

Room: P5

**Time: 11:00-12:30,  
Paper Forums**

**Chair: Prof. Jan Harm Christiaan Pretorius, University of Johannesburg**

- PES-APPEEC-164, Multi-Support Vector Machine Power System Transient Stability Assessment Based on Relief Algorithm**, Yuanhang Dai; Lei Chen; Weiling Zhang; Yong MIN, China.
- PES-APPEEC-021, A Novel Stability Classifier Based on reformed Support Vector Machines for Online Stability Assessment**, Weiling Zhang; Wei Hu; Yong Min; Lei Chen; Le Zheng; Xianzhuang Liu, China.
- PES-APPEEC-185, Power System Stability Implications from Electromechanical Wave Propagation**, Tianya Li; Gerard Ledwich; Yateendra Mishra; Joe Chow, Australia.
- PES-APPEEC-044, An Improved Voltage Stability Assessment for Power System with HVDC**, Di Yang; Haozhong Cheng; Jian Zhang; Weifang Lin; Quancai Sun; Sidun Fang; Liping Liu, China.
- PES-APPEEC-210, Sensitivity Studies and Calibration of Small signal models**, Joseph Leung; Tim George, Australia.
- PES-APPEEC-014, A new fault location method for distribution networks using multi-source information**, ChaoQun Zhu; Tingting Bo; Zhanjun Gao; Chen Qing; Yi Zhu; Pu Zhao, China.
- PES-APPEEC-108, Evaluation of Performance of Distance Relays in Presence of Series Compensators**, Alireza Gheitasi, New Zealand.
- PES-APPEEC-217, Small Signal Sensitivity Technique for Determining Inter-connector Transfer Limits**, Joseph Leung; Tim George; Sheng Goh, Australia.



**Time: 13.30-15.30,**  
**Paper Forums**

**Chair: Prof. Shunji Kawamoto, Osaka Prefecture University**

- PES-APPEEC-190, Reactive Power Loss Based Voltage Instability Detection using Synchrophasor Technology**, H.K Chappa; Tripta Thakur, India.
- PES-APPEEC-126, Identification of Inter-Area Oscillations Using Zolotarev Filter Bank With Eigen Realization Algorithm**, Kalyani Mandadi; Kalyan Kumar B, India.
- PES-APPEEC-146, Many-objective Reactive Power Optimization Using Particle Swarm Optimization Algorithm Based on Pareto Entropy**, Xu Zhuansun; Jielong Wu; Anming Zhu; Tong Han; Yanbo Chen; Jin Ma, China.
- PES-APPEEC-186, Prediction of Voltage Collapse through Voltage Collapse Proximity Index and Inherent Structural Characteristics of Power System**, Isaiah Adebayo; Adisa Jimoh; Adedayo Yusuff, South Africa.
- PES-APPEEC-024, A Probabilistic Load Flow Method Based on Modified Nataf Transformation and Quasi Monte Carlo Simulation**, Sidun Fang, China.
- PES-APPEEC-203, Research on Voltage-inducing Cascading Trips of Large-scale New Energy in Centralized System**, Guanteng Xiang; Wei Hu, China.
- PES-APPEEC-174, Optimal Signal Selection of Wide Area Damping Controller Considering Time Delay in Multi-Machine Power System**, NP Patidar; Mohan Kolhe, India.
- PES-APPEEC-179, Pitch Controller Modeling for Wind Turbine Power Regulation using Feed Forward Control Strategies**, KMSY Konara; Mohan Kolhe, Norway.
- PES-APPEEC-013, A New Control Strategy of DFIG-based Wind Farms for Power System Frequency Regulation**, Tongxiao Wang; Lei Ding; Shanyao Yin; Jiping Jiang; Famin Cheng; Juncheng Si, China.
- PES-APPEEC-231, The Application of TCSC for Damping Inter-area Oscillations**, Jingli Liu; Lei Ding; Deyu Cai; Zhiming Song, China.
- PES-APPEEC-167, On Analysis of Blackouts**, Pragati Gupta; Suresh Varwandkar; M.V. Hariharan, India.
- PES-APPEEC-111, Flexible Power Flow Solver for Interconnected Transmission and Distribution Network Using PSASP and DigSILENT**, Haiyun Wang; Shaowei Huang; Yankan Song; Yan Zhang; Cunping Wang; Zun Wei, China.
- PES-APPEEC-204, Reserve Indicator with Security and Stability Constraints Taken into Account for Power System Security Assessment**, Haixia Wang; Dandan Zhu; Weidong Li; Lingling Pan; Biqiang Tang, China.
- PES-APPEEC-063, Comparisons of Different Techniques in Semidefinite Programming for Hydrothermal Coordination Problem**, Yunan Zhu; Jian Liu; Dan Gong; Zhengqi Tian; Chao Zhou, China.

**Time: 13.30-15.30,**  
**Paper Forums**

**Chair: Mr Jason Hall, Ergon Energy**

- PES-APPEEC-065, Conceptual Design of Situation Awareness Visualization for Active Distribution System and Picture based Analysis**, Jianmin Zhang, China.

## Tuesday, 17<sup>th</sup> November

- PES-APPEEC-171, Optimal Integration of Microgrid For Distribution Network**, Pan Hu, China.
- PES-APPEEC-242, Two-layer Reactive Power Optimal Dispatching Model for High-Voltage Distribution Network and Application**, Jianmin Zhang, China.
- PES-APPEEC-161, Multi-Objective Distribution Network Reconfiguration based on System Homogeneity**, Zhi Li; Yingkai Bao; Yuqi Han; Chuangxin Guo; Wei Wang; Yuzhe Xie, China.
- PES-APPEEC-079, Design of Energy Dispatch Strategy of Active Distribution Network Using Chance-constrained Programming**, Xie Hua; Chen Yuxi; Wang Jian; Vassilios Agelidis, China.
- PES-APPEEC-219, Soft Open Points for Supply Restoration in Medium Voltage Distribution Networks**, Wanyu Cao; Jianzhong Wu; Zeyang Huang, United Kingdom.
- PES-APPEEC-032, A study on the voltage sensitivity of LVABC and underground cable connected distribution networks**, Mohammed Hossain; Ruifeng Yan; Tapan Saha; Vince Garrone, Australia.
- PES-APPEEC-112, Framework for Determining the Compensation Price for Output Curtailment of Distributed Generation within Active Distribution Network Management**, Seung Wan Kim; Jae Won Lee; Jip Kim; Young Gyu Jin; Yong Tae Yoon, South Korea.
- PES-APPEEC-143, Life Cycle Cost Based Maintenance Schedule Optimization for Distribution Equipment**, Jingyi Zhang; Yan Liu, China.
- PES-APPEEC-148, Meeting New Distribution Power System Challenges**, Levin Mardira; Matt McGrail; Scott Hagaman; Tim George; Joseph Leung, Australia.
- PES-APPEEC-252, Voltage Regulation of Distribution Networks using Inverter Reactive Power Functionality – Australian Utility Experience**, Dean Condon; Donald McPhail, Australia.
- PES-APPEEC-251, Voltage Regulation Based on Hierarchical and District-dividing Control for Active Distribution Network**, TingRu Meng, China.
- PES-APPEEC-250, Visualising the Effect of DG on Voltage Profile in Medium Voltage Distribution Networks**, Yasmin Nigar Abdul Rasheed; Ashish Agalgaonkar; Phil Ciufu, Australia.
- PES-APPEEC-194, Reliability Based Planning Methodology for Feeder Automation**, Jan Harm Pretorius; Thami Mavuso; Arie Wessels, South Africa.

Session 6: ELECTRIC VEHICLE AND STORAGE

Room: P5

Time: 13.30-15.30,  
Paper Forums

Chair: Prof. Luigi Piegari, Politecnico di Milano

- PES-APPEEC-198, Research on Inverter-Based Distribution Generation and its effect on Distribution Network based on PSCAD/EMTDC**, Zening Qin, China.
- PES-APPEEC-193, Regional Autonomy Control of EV Charging with PV/ES Systems in Active Distribution Network**, Chen Zhang; Guiping Zhu, China.
- PES-APPEEC-157, Modeling Charging Demands of Various Types of Electric Vehicles in an Actual Distribution System**, Xiaolei Wang; Fushuan Wen, China.
- PES-APPEEC-056, Charging Electric Vehicles from Distributed Solar Generation**, James De Silva; Keith Fisk, New Zealand.
- PES-APPEEC-214, Simulation-based Approach for Investigating the Impact of Electric Vehicles on Power Grids**, David Ciechanowicz; Dominik Pelzer; Alois Knoll, Singapore.

- PES-APPEEC-017, A new schedule-controlled strategy for charging large number of EVs with load shifting and voltage regulation**, Tian Mao, China.
- PES-APPEEC-176, Optimizing and Testing of Batteries for a Smart Grid**, Ali Arefi; Gerard Ledwich; Richard Taylor; Alan Louis, Mithulananthan Nadarajah, Australia.
- PES-APPEEC-247, Value Propositions of Energy Storage Options for Wind Power Output Smoothing**, Jorge Salgado-Contreras; Rahul Sharma; Shantha Ranatunga; Stephanie Moroz; Sebastian Thomas, Australia.
- PES-APPEEC-048, Applicability of Load Forecasting Techniques for Customer Energy Storage Control Systems**, Christopher Bennett; Mojtaba Moghimi; Jahangir Hossain; Junwei Lu; Rodney Stewart, Australia.
- PES-APPEEC-248, Vehicle to Grid System in Frequency Regulation for Securing Electricity Network Stability**, Timo Lehtola; Ahmad Zahedi, Australia.
- PES-APPEEC-218, Smart Hybrid Energy Storage for Stand-alone PV Microgrid: Optimization of Battery Lifespan through Dynamic Power Allocation**, Wenlong Jing; Chean Hung Lai; M L. Dennis Wong; Wallace Shun Hui Wong, Malaysia.
- PES-APPEEC-184, Power Sharing for Distributed Energy Storage Systems in AC Microgrid: Based on State-of-Charge**, Omid Palizban; Kimmo Kauhaniemi, Finland.
- PES-APPEEC-080, Desirable Control Features of Battery Energy Storage Systems for Commercial Scale Solar PV Plants**, M J E Alam; Ruifeng Yan; Tapan Saha, Australia.

Session 7: MICROGRID AND DISTRIBUTED GENERATION Room: P3

Time: 16:00-17:30,

Paper Forums,

Chair: Prof. HAZLIE BIN MOKHLIS, University of Malaya

- PES-APPEEC-230, Testing Facility for Research and Development of Smart-MicroGrid Technologies**, Domagoj Leskarac; Christopher Bennett; Mojtaba Moghimi; Sascha Stegen; Junwei Lu, Australia.
- PES-APPEEC-070, Cost-Based Droop Scheme for DC Microgrid Using a Sparse Network and its Topology Optimization**, Zhenyu Lv; Zaijun Wu; Xiaobo Dou; Minqiang Hu, China.
- PES-APPEEC-216, Slow Coherency Based Adaptive Controlled Islanding Scheme of the China Southern Power Grid**, Yinguo; Zhi An; Jingmin Ni; Chen Shen; Qingang Duan; Guobing Wu; Rui Chen; Li Li, China.
- PES-APPEEC-120, Harmonic Mitigation in an Islanded Microgrid using a DSTATCOM**, Megha Goyal; Blessy John; Arindam Ghosh, Australia.
- PES-APPEEC-057, Charting the Course for Tasmania's Energy Cloud Roadmap**, Marcus Steel; Dan Candotti; Andrew West, Australia.
- PES-APPEEC-091, Distributed Generation Nanogrid Load Control System**, Daniel Burmester; Ramesh Rayudu; Winston Seah, New Zealand.
- PES-APPEEC-173, Optimal Placement of Distributed Generations Considering Carbon Emission Constraint**, Xifan Wan; Yong Li; Yi Tan; Yijia Cao; Shiming Tian; Fanpeng Pu, China.
- PES-APPEEC-113, Fuel Efficiency Improvement by Optimal Scheduling of Diesel Generators using PSO in Offshore Support Vessel with DC Power System Architecture**, Priyesh Chauhan; Srinivasa Rao Kamala; Sanjib K Panda; Gary Wilson; Xiong Liu; Amit Kumar Gupta, Singapore.
- PES-APPEEC-001, 'Creative Destruction' v 'Creative Accumulation': Organisational Transformation Challenges Confronting Electricity Distribution Monopolies**, Paul Newbury; Mark Paterson, Australia.

## Tuesday, 17<sup>th</sup> November

**PES-APPEEC-137, Integration of Renewable Energy Generation with Conventional Diesel-engine Powered Generation in a Microgrid, Daming Zhang, Australia.**

### Session 8: STATE ESTIMATION

Room: P4

**Time: 16.00-17.30,  
Paper Forums,**

**Chair: Dr. Olav Krause, University of Queensland**

**PES-APPEEC-141, Kalman Filter Based Microgrid State Estimation and Control Using the IoT with 5G Networks, Md Rana; Li Li; Steven Su, Australia.**

**PES-APPEEC-092, Distributed Microgrid State Estimation Using Smart Grid Communications, Md Rana; Li Li; Steven Su, Australia.**

**PES-APPEEC-244, Under-Determined WLMS State Estimation, Olav Krause; Daniel Martin, Australia; Sebastian Lehnhoff, Germany.**

**PES-APPEEC-140, Kalman Filter Based Distributed State Estimation with Communication Systems, Md Rana; Li Li; Steven Su, Australia.**

**PES-APPEEC-049, Application of Partitioned-Based Moving Horizon Estimation in Power System State Estimation, Tengpeng Chen; Ashok Krishnan; Anthony Tri Tran, Singapore.**

**PES-APPEEC-220, State Estimation for Distribution Systems Using Micro-Synchrophasors, Xuebing Chen; King Jet Tseng; Gehan Amaratunga, Singapore.**

**PES-APPEEC-256, Women in Engineering – an Equitable Future, S. Crawley, Australia**

### Session 9: POWER SYSTEM PLANNING

Room: P5

**Time: 16:00-17:30,  
Paper Forums,**

**Chair: Dr. Joseph Leung, DigSilent**

**PES-APPEEC-201, Research on the Influence of Energy Power Planning Deviation on the Non-fossil Energy Development Goal, Weiting Xu; Quan Tang; Yunling Wang; Han Feng, China.**

**PES-APPEEC-241, Transmission System Planning Considering Integration of Renewable Energy Resources, Lei Tang; Fushuan Wen; Abdus Salam; Sweepeng Ang, China.**

**PES-APPEEC-118, Generation Expansion Planning with Decomposition-Coordination: An Improved Iterative Method, Can Dang; Xifan Wang; Xiuli Wang; Yunpeng Xiao; Weijun Teng, China.**

**PES-APPEEC-117, Generation Expansion Planning in Queensland under Rooftop Photovoltaic Penetration and Gas Market Uncertainties, Juliana Nunes; Nadali Mahmoudi; Tapan Saha; Debabrata Chattopadhyay, Australia.**

**PES-APPEEC-136, Integrated Planning of Distribution System and Gridable Parking Lots, Mohsen Parsa Moghaddam; Mahnaz Moradijooz; Mahmoud-Reza Haghifam, Iran.**

**PES-APPEEC-095, Distribution Network Planning Considering DGs, Wang Zhiyang, China.**

**PES-APPEEC-007, A General Methodology for Utility Microgrid Planning: A Cairns Case Study, Nicholas Beere; Rahul Sharma; Donald McPhail, Australia.**

**PES-APPEEC-202, Research on the LCC Model of Power Network Planning Scheme with Reliability Evaluation Taken into Consideration, Xi Gu, China.**

**Time: 11:00-12:30,  
Posters**

**Chair: Dr. Ramesh Rayudu, Victoria University of Wellington**

- PES-APPEEC-010, A Measurement-based Control Input-output Signal Selection Approach to Damp Inter-area Oscillations**, Feifei Bai; Hesen Liu; Lin Zhu; Yilu Liu; Kai Sun; Xiaoru Wang; Mahendra Patel; Evangelos Farantatos, United States of America.
- PES-APPEEC-130, Impact of Series Active Voltage Conditioners on Modernized Grid**, Mostafa Nazih; Ramesh Rayudu, New Zealand.
- PES-APPEEC-018, A New Strategy for Islanding Operation of Distribution Network Connected with Rotating Type DG**, J.A. Laghari; Hazlie Mokhlis; Hazlee Azil Illias; Hasmaini Mohamad; Ab Halim Abu Bakar, Pakistan.
- PES-APPEEC-028, A Robust and Economic Scheduling Methodology for Interconnected Power System with Wind Farms Considering Tie-line Dispatching Mode**, Honghu Zhou; Ran Li, China.
- PES-APPEEC-027, A Risk Management Model for Carbon Constrained Coal Inventory Optimization**, Jiajia Yang; Junhua Zhao; Fushuan Wen; Zhaoyang Dong, Australia.
- PES-APPEEC-038, Advances in Remedial Action Scheme Modeling for Power System Analysis**, Daniel L. Donaldson; David M. Piper, United States of America.
- PES-APPEEC-124, Identification of Critical Buses and Weak Transmission Lines Using Inherent Structural Characteristics Theory**, A.S. Alayande; A.A. Jimoh; A.A. Yusuff, South Africa.
- PES-APPEEC-155, Modeling and Simulation of Multi-scale Transients for Voltage Source Converter in AC-DC Power Systems with Shifted Frequency Analysis**, Hua Ye; Yanan Tang; Wei Pei; Zhiping Qi, China.
- PES-APPEEC-030, A Settlement Method for Inter-provincial Electricity Trading Employing a Modified Transmission Loss Rate**, Jiahua Hu; Fushuan Wen; Md. Abdus Salam; Swee Peng Ang, China.
- PES-APPEEC-195, Renewable Energy Development in Australia: Regulatory to Technical Challenges**, Sudarshan Dahal; Mithulananthan Nadarajah, Australia.
- PES-APPEEC-222, Stochastic Analysis Results for Coordination of Single-Phase Rooftop PVs in Unbalanced Residential Feeders**, Nelly Safitri; Farhad Shahnja; Mohammad A.S Masoum, Australia.
- PES-APPEEC-015, A New Model for Short-Circuit Current Calculation of Distribution Networks Integrated with Numerous Distributed Generations**, Yiwei Sun; Bin Liu; Qing Yue; Yuchen Wang; Zhiwen Wang; Laijun Chen, China.
- PES-APPEEC-128, Impact of Variable Renewable Generation on Future Market Prices and Generator Revenue**, P. Vithayasrichareon; J. Riesz; I. MacGill, Australia.
- PES-APPEEC-004, A Combined Forecasting Method for Renewable Generations and Loads in Power Systems**, Zhe Wen; Yong Li; Yi Tan; Yijia Cao; Shiming Tian, China.
- PES-APPEEC-039, Allocation of Spinning Reserve Cost in the System with Wind Power Integration**, Lyu Quan; Zhao Yun-li; Li Wei-dong; Zhu Quan-Sheng, China.
- PES-APPEEC-172, Optimal Low Frequency for Offshore Wind farm Based on Component Loss Calculation**, Koganti Srilakshmi; U. Madhava Rao; MB. Srinivas, India.
- PES-APPEEC-246, Validation of a Static VAr System Model for a Renewable Project for Grid Code Compliance**, Xiaokang Xu; Martin Bishop; Donna G. Oikarinen; Owen Lock, United States of America.

## Tuesday, 17<sup>th</sup> November

- PES-APPEEC-059, Common DC Bus Concept in Power Plant Auxiliary System: Part I Reliability Evaluation**, Yu Rongrong; Chen Yao, China.
- PES-APPEEC-060, Common DC Bus Concept in Power Plant Auxiliary System Part II Economic Analysis**, Yu Rongrong; Chen Yao, China.
- PES-APPEEC-002, A Case Study into Improving the 24-Month Mid-Term Forecasting of Wind Energy by Combining with PVs**, J. Patel; D. Martin; J. Chan; O. Krause, Australia.
- PES-APPEEC-008, A Hybrid EMD-SVM Based Short-term Wind Power Forecasting Model**, Wendan Zhang; Fang Liu; Xiaolei Zheng; Yong Li, China.
- PES-APPEEC-064, Composite Pricing Strategy for Energy Storage in Wind Electric Generation**, Sony Kurian; Sindhu T. K.; Elizabeth P. Cheriyan, India.
- PES-APPEEC-068, Coordinated control of Multi-FACTS based on Improved Teaching-Learning Algorithm to Improve ATC**, Peng Zhang; Wei Hu; Wei Xu; Faqi Yan, China.
- PES-APPEEC-061, Communication Architecture and Data Acquisition for Experimental MicroGrid Installations**, Mojtaba Moghimi; Christopher Bennett; Domagoj Leskarac; Sascha Stegen; Junwei Lu, Australia.
- PES-APPEEC-259, Distributed Algorithm for PMU Placement Under N-1 Line Outage Conditions**, Xian-Chang Guo; Chung-Shou Liao; Chia-Chi Chu, Taiwan.
- PES-APPEEC-087, Development of Risk Optimization Model for High Voltage Substation Transformer Maintenance**, Rattanakorn Phadungthin; Juthathip Haema, Thailand.
- PES-APPEEC-009, A Loss Sensitivity Factor Method for Locating ES in a Distribution System with PV units**, Junainah Sardi; Mithulanathan Nadarajah; Quoc Hung Duong, Australia.
- PES-APPEEC-147, Medium Voltage Grid Conventional Control in the Presence of a Large Scale Photovoltaic System**, Jaroslaw Krata; Ruifeng Yan; Tapan Kumar Saha, Australia.
- PES-APPEEC-081, Detailed Modeling and Simulation of  $\pm 500$ kV HVDC Transmission System Using PSCAD/EMTDC**, Pu Liu, China.

Session 11: POWER SYSTEM ANALYSIS

Room: P2

Time: 13.30-15.30,  
Posters

Chair: Dr. Yateendra Mishra, Queensland University of Technology

- PES-APPEEC-022, A Novel Technique to Enhance Demand Responsiveness: An EV Based Test Case**, Bishnu Prasad Bhattarai; Mostafa F Astaneh; Birgitte Bak-Jensen; Jayakrishnan Pillai; Weihao Hu; Zhe Chen, Denmark.
- PES-APPEEC-132, Influence of Moisture and Ageing on Dielectric Response of Ester and Mineral Oil Impregnated Pressboard Insulation**, Kapila Bandara; Tapan Saha; Chandima Ekanayake, Australia.
- PES-APPEEC-052, Axiomatization Allocation of Emission Allowances in Power Systems Considering Bounded Rationality Strategic Voting**, Tian-hua Mei; De-Qiang Gan; You-Min Tang, China.
- PES-APPEEC-041, An Adaptive DFT Algorithm for Measuring Power System Synchrophasors Based on Rectangular Coordinate**, Shiming Liu; Tao Guo, China.
- PES-APPEEC-199, Research on Operating Overvoltage of No-Load Long Power Cable Line and Preventive Measure**, Haitao Li; Yuefeng Lu, China.
- PES-APPEEC-178, Performance Evaluation of a Process Bus Architecture in a Zone Substation based on IEC 61850-9-2**, Shantanu Kumar; Narottam Das; Syed Islam, Australia

- PES-APPEEC-019, A Novel Optimal Controller Design for Doubly Fed Induction Generator Speed Control**, Likin Simon; Shanti Swarup K, India.
- PES-APPEEC-058, Coherency Feature Extraction Based on DFT-Based Continuous Wavelet Transform**, Yifan Zhou; Wei Hu; Xianzhuang Liu; Qiangming Zhou; Hongqiao Yu; Qian Pu, China.
- PES-APPEEC-255, Wireless Temperature and Illuminance Sensor Nodes With Energy Harvesting from Insulating Cover of Power Cords for Building Energy Management System**, Masanobu Honda; Makoto Takamiya; Takayasu Sakurai, Japan.
- PES-APPEEC-123, Human Energy Harvesting Adapted for Portable Electronics Applications**, Navid Mohajer; Hamid Abdi; Saeid Nahavandi, Australia.
- PES-APPEEC-029, A Series Voltage Compensator Based on Thyristor Controlled Transformer**, Chunpeng Zhang; Qirong Jiang; Yingdong Wei, China.
- PES-APPEEC-042, An Analysis to the Concentric Relaxation Vulnerability Area of Voltage Sag in Power System**, Tengting Wang; Lijun Tian, China.
- PES-APPEEC-150, Modal Identification by Curve-fiting of Power Spectra**, Jin Kwon Hwang, South Korea.
- PES-APPEEC-105, Energy Internet Risk Assessment Framework**, Hui Hou, China.
- PES-APPEEC-188, Rail Power Conditioner Technology in Australian Heavy Haul Railway: a Case Study**, Igor Perin; Peter Nussey; Truc Tran; Umberto Cella; Geoffrey Walker, Australia.
- PES-APPEEC-099, Earth Hour Energy Impact**, Manisha Senadeera; James McGree, Australia.
- PES-APPEEC-051, Autonomous Solar Supply for Railway Signalling**, Cameron Smeed, Australia.
- PES-APPEEC-085, Development and Design of Dispatcher Training Simulation Evaluation System based on IDAC**, Yingkai Bao; Zhi Li; Dongshan Wen; Chuangxin Guo; Li Zhang; Suhong Pang, China.
- PES-APPEEC-127, Impact of Breaker Maintenance on Life Cycle Cost Comparison for Fixed and Magnetically-Controlled Reactors**, Jan Harm Pretorius; Nhlanhla Mbuli; Lehlohonolo Mashego; Sphiwe Nkosi, South Africa.
- PES-APPEEC-232, The Construction of Lanzhou New District Based on Smart Grid**, Xuefeng Fan; Diangang Hu; Zhaoyan Chen; Haoliang Xu; Yunfei Tian; Erqiang Yang, China.
- PES-APPEEC-116, Fuzzy Comprehensive Risk Assessment of Distribution Network Fault Based on Rough Set Theory**, Tingting Bo; Chen Qing; Zhanjun Gao; Chaoqun Zhu; Pu Zhao; Yi Zhu, China.
- PES-APPEEC-144, Locating and Sizing of Photovoltaic Generation and Energy Storage in Active Distribution Network Based on Virtual Partition**, Muke Bai; Wei TANG; Pengwei Cong; Cong Wu; Xiaohui Zhang; Limei Zhang; Yongfu Liu, China.
- PES-APPEEC-215, Single Household Domestic Water Heater Design and Control Utilising PV Energy: the Untapped Energy Storage Solution**, Lei Liu; Gerard Ledwich; Wendy Miller, Australia.
- PES-APPEEC-158, Modelling and Simulation of a Solar PV Lithium Ion Battery Charger for Energy Kiosks Application**, Flavio Palmiro, New Zealand.
- PES-APPEEC-206, Residential Precinct Demand Forecasting using Optimised Solar Generation and Battery Storage**, Steven Percy; Mohammad Aldeen; Adam Berry, Australia.
- PES-APPEEC-047, Analysis of the Photovoltaic Cells Output Power Based on the Door-connection under Mismatch**, Han Feng; Meiyi Hou, China.
- PES-APPEEC-156, Modelling and Stability Analysis of Hybrid Energy Storage System under Hierarchical Control**, Qianwen Xu; Peng Wang; Jianfang Xiao; Changyun Wen; Lee Meng Yeong, Singapore

## Tuesday, 17<sup>th</sup> November

**PES-APPEEC-045, An Online Algorithm Based on Lyapunov Optimization for Energy Management of Household Micro-grids**, Nian Liu; Wei Fan; Nian Liu; Jianhua Zhang, China.

**PES-APPEEC-075, Demand Response Capability Assessment for Buildings Based on Simulation and Model Simplification**, Fan Yang; Qinglai Guo; Zhaoguang Pan; Hongbin Sun; Da Yan, China.

Session 12: POWER ELECTRONICS, CONTROL AND DRIVES Room: P2

Time: 16.00-17.30,

Posters

Chair: Dr. Hui Ma, University of Queensland

**PES-APPEEC-067, Control strategy of the bi-directional converter for hybrid AC/DC microgrid**, Pan Hu; Wenyan Hu, China

**PES-APPEEC-114, Full Bridge Resonant Inverter for Non-ferrous Metal Induction Heating Application**, Rattanakorn Phadungthin; Juthathip Haema, Thailand

**PES-APPEEC-026, A Reduced Capacitance UPFC with Active Filtering Capability for High PV Penetration Applications**, Md Mejbaul Haque; Peter Wolfs, Australia.

**PES-APPEEC-233, The Discrete Space Vector Modulation Strategy for the Permanent Magnet Synchronous Machine with Large Inertia**, Xin Zhou; Chong Wang, China.

**PES-APPEEC-096, Droop Control of Current-source Converters in Bipolar-Type DC Microgrid**, Chen Jiang, China.

**PES-APPEEC-078, Design of Control Structure for Modular Multilevel Converter**, Jichuan Zhang; Long Jing; Lei Shao; Xiaoyao Yuan, China.

**PES-APPEEC-020, A Novel Precharge Control Strategy for Modular Multilevel Converter**, Pan Hu; Xiaonan Yang, China.

**PES-APPEEC-071, Crank-Nicholson Scheme based Wind Speed Modeling**, Feng Wu; Weiya Kong; Yu Zhou; Linjun Shi; Junhui Huang; Liwei Qiao; Yuqing Jin; Jingdong Han; Ping Ju, China.

**PES-APPEEC-097, Dynamic Equivalent Model of Wind Farm Based on the K Nearest Neighbor**, Weijun Teng; Xifan Wang; Can Dang; Wenhui Shi, China.

**PES-APPEEC-160, Modelling, Control and Performance Analysis of a 6 MW Wind Turbine**, Adrian Jess; Rahul Sharma, Australia.

**PES-APPEEC-046, an Up-Down Hierarchical and Distributed Control Framework in IT Infrastructure for Voltage Control**, Arian Bahramsari; Javad Ansari; Ahad Kazemi, Australia.

**PES-APPEEC-152, Model Validation of a Wind Farm using Hybrid Data Simulation**, Zhao Da-wei; Ma Jin; Qian Min-hui; Liu Yan-zhang; Zhu Ling-Zhi; Chen Ning, China.

**PES-APPEEC-016, A New Re-synchronize Control Strategy for Hybrid Offshore Wind Farm Auxiliary Power Supply System**, Xing Huang; Yao Chen, China.

**PES-APPEEC-011, A Methodology for a Correct Sizing of Electrochemical Storage Devices**, Luigi Piegari; Simone Barcellona; Enrico Tironi; Vincenzo Musolino, Italy.

**PES-APPEEC-100, Effect of External Resistance on SOH Measurement of LFP Cells**, Hsiang-Fu Yuan; Lan-Rong Dung, Taiwan.

**PES-APPEEC-213, Simulation of Core Shape Considerations of Wireless Charging Systems for Electric Vehicles**, Chiragkumar Panchal; Sascha Stegen; Junwei Lu, Australia.

**PES-APPEEC-077, Design of Battery Monitoring System Based on the Two-Level Architecture and Enhanced SOC Method**, Shili Lin; Ziping Feng; Wenji Song; Jie Lv, China.



- PES-APPEEC-154, Modeling and LVRT Analysis of DFIG Wind Power System**, Huiqing Wen, China.
- PES-APPEEC-082 Determination of Harmonic Source's Total Harmonic Contributions in Distribution Network and Its Realization on Platform of LabVIEW**, Xiangyu Dou; Lijun Tian; Daozhu Ma; Yu Cui, China.
- PES-APPEEC-149, Microgrid Modeling and Simulation Scenario Design for Power Quality Analysis**, Kexuan Tang; Chen Shen; Weidong Chen; Bin Liu; Qing Yue; Yiwei Sun, China.
- PES-APPEEC-090, Distributed Generation Control Strategy for Microgrid Power Quality Improvement**, Xuewei Duan; Ruiqi Wang, China.
- PES-APPEEC-159, Modelling of High Power Mechanical DC Circuit Breaker**, Weixing Lin; Dragan Jovcic; Samuel Nguéfeu; Hani Saad, United Kingdom.
- PES-APPEEC-069, Coordinated Pitch and Generator Control for Wind Turbine Flexible Power Tracking**, Xing Huang; Yao Chen, China.
- PES-APPEEC-197, Research on Adaptive Synthesis Dynamic Load Model Based on Multiple Model Ideology**, Zhenshu Wang; Yangyang Ma; Xiaohui Jiang, China.
- PES-APPEEC-181, PMU Measurement Based Dynamic Load Modeling using SVC Devices in Online Environment**, Keqian Hua; Arash Vahidnia; Yateendra Mishra; Gerard Ledwich, Australia.
- PES-AP PEEC-035, A Traffic Flow Based Planning Strategy for Optimal Siting and Sizing of Charging Stations**, Yue Xiang; Junyong Liu, China.
- PES-APPEEC-104, Electromagnetic Transient Simulation of Induction Machine based on QSS Algorithm**, Zun WEI; Haiyun WANG; Ying CHEN; Shaowei HUANG; Zaichi ZHANG; Zhitong YU; Qiankun CHANG, China.

Session 1: DEMAND RESPONSE

Room: P3

**Time: 08:30 – 10:30,  
Presentations**

**Chair: Prof. Ian Hiskens, University of Michigan**

**PES-APPEEC, Control of ensembles of thermostatically controlled loads,** Ian Hiskens, United States of America.

**PES-APPEEC-145, Long Term Incentives for Residential Customers Using Dynamic Tariff,** Shaojun Huang; Qiuwei Wu; Arne Nielsen; Haoran Zhao; Zhaoxi Liu, China.

**PES-APPEEC-238, Time-of-use Tariff Hierarchical Optimization Model Considering Load Factor Block,** Jiejing Wu; Haitao Huang; Lei He, China.

**PES-APPEEC-192, Real-time Testing Platform for Demand Side Management Algorithms of DC Distribution System,** Gilsung Byeon; Gyeong-Hun Kim; Jin-Hong Jeon; Seoul-Ki Kim; Jong-Yul Kim, Korea.

**PES-APPEEC-168, Operation Scheduling considering Demand Response in a Commercial Building with Chiller System and Energy Storage System,** Joonho Son; Ryoichi Hara; Hiroyuki Kita; Eiichi Tanaka, Japan.

**PES-APPEEC-258, Review of demand side management modelling for application to renewables integration in Australian power market,** Zoe Hungerford; Anna Bruce; Iain MacGill, Australia.

**PES-APPEEC-043, An Energy Acquisition Model for an Aggregator Considering Demand Responses,** Linna Ni; Fushuan Wen; Abdus Salam; Swee Peng Ang, China.

Session 2: TRANSMISSION NETWORK

Room: P4

**Time: 08:30 – 10:30,  
Presentations**

**Chair: Dr. Sudarshan Dahal, Power Link**

**PES-APPEEC-139, Investigation of interconnecting two Chinese LCC-HVDC through LCL DC/DC Converter,** Weixing Lin; Dragan Jovcic; Liangzhong Yao; Wei Sun; Xiaojun Lu; Jinyu Wen, United Kingdom.

**PES-APPEEC-153, Modeling and Characteristic Analysis of a Hybrid Dual-Infeed DC Transmission System based on DigSILENT PowerFactory,** Qian Min-hui; Zhao Dawei; Zhu Ling-Zhi; Ju Rong-rong; Luo Fang; Chen Ning; Ma Jin, Australia.

**PES-APPEEC-040, Alternate Iteration Method for Power Flow Analysis of Interconnected System of Fractional Frequency Transmission System and Main Grid,** Ming Lu; Xifan Wang; Lianhui Ning; Shenquan Liu; Yunpeng Xiao; Pengwei Sun, China.

**PES-APPEEC-131, Influence of Aging Characteristics of Conductor Surface on Resultant Electric Field of  $\pm 800$ kV UHVDC Transmission Line,** Yong Yi; Zhengying Chen; Liming Wang, China.

**PES-APPEEC-165, Numerical Optimization and 3D-Printing Fabrication Concept of High Voltage FGM Insulator,** Wen-Dong Li; Xiao-Yu You; Hai-Bao Mu; Jun-Bo Deng; Guan-Jun Zhang, China.

**PES-APPEEC-163, Multi-objectives OPF of AC-DC Systems Considering VSC-HVDC Integration,** Puyao Yu; Yanbo Chen, China.

**PES-APPEEC-151, Model Predictive Control Considering Cyber-Physical System to Dampen Low Frequency Oscillations of Interconnected Power Systems**, Xinyu Shi; Yong Li; Yijia Cao; Yi Tan; Zhisheng Xu; Min Wen, China.

Session 3: SOLAR PV

Room: P5

**Time: 08:30 – 10:30,**  
**Presentations**

**Chair: Mr Peter Kilby, Dr. Daniel Eghbal, Energex**

**PES-APPEEC-050, Assessing the Representativeness of ‘Live’ Distributed PV Data for Upscaled PV Generation Estimates**, Navid Haghdadi; Anna Bruce; Lain MacGill, Australia.

**PES-APPEEC-191, Real Time Generation Mapping of Distributed PV for Network Planning and Operations**, Navid Haghdadi; Jonathan Dennis; Anna Bruce; Iain MacGill, Australia.

**PES-APPEEC-121, Hosting Capacity of Solar Photovoltaics in Distribution Grids under Different Pricing Schemes**, Riccardo Carollo; Sanjay Chaudhary; Jayakrishnan Radhakrishna Pillai, Denmark.

**PES-APPEEC-109, Field Investigation of Voltage Quality Issues in Distribution Network with PV Penetration**, Annapoorna Chidurala; Tapan Saha; Mithulananthan Nadarajah, Australia.

**PES-APPEEC-086, Development of an automatic Cleaning System for Photovoltaic Plants**, Alireza Gheitasi, New Zealand.

**PES-APPEEC-205, Residential Electricity Costs – Assessment of Queensland Electricity Tariffs for Solar Households**, Manisha Senadeera; Wendy Miller, Australia.

**PES-APPEEC-066, Construction of PV Simulator by using Geographic Information System and Digital Surface Model**, Yuki Koyamatsu; Thongchart Kerdphol; Yaser Qudaih, Japan.

**PES-APPEEC-211, Short-term Power Forecasting for Photovoltaic Generation Based on Wavelet Neural Network and Residual Correction of Markov Chain**, Xie Hua; Yang Le; Wang Jian; Vassilios Agelidis, China.

Session 4: ELECTRIC VEHICLE AND ENERGY STORAGE

Room: P3

**Time: 11:00 – 12:30,**  
**Presentations**

**Chair: Prof. Yong Li, Hunan University**

**PES-APPEEC-183, Power and Hour Capacity Requirement for an Energy Storage from Grid Codes**, Masakazu Ito; Yu Fujimoto; Masataka Mitsuoka; Hideo Ishii; Yasuhiro Hayashi, Japan.

**PES-APPEEC-207, Residential Tariff Structure and Battery Energy Storage Impact in Queensland LV Network**, Christopher Du Pless; Geoffrey Walker; Houman Pezeshki, Australia.

**PES-APPEEC-098, Dynamic Load Control at a Bidirectional DC Fast Charging Station for PEVs in weak AC grids**, Mohsen Ahmadi; Mithulananthan Nadarajah; Rahul Sharma, Australia.

**PES-APPEEC-034, A Tool to Estimate Maximum Arbitrage from Battery Energy Storage by Maintaining Voltage Limits in an LV Network**, Shohana Rahman Deeba; Rahul Sharma; Tapan Saha; Debraj Chakraborty, Australia.

## Wednesday, 18<sup>th</sup> November

**PES-APPEEC-170, Optimal Configuration of Battery Energy Storage System for Peak-load Regulation**, Guodong Xu; Haozhong Cheng; Sidun Fang; Qinyong Zhou; Hailei He; Pingliang Zeng, China.

**PES-APPEEC-053, Battery Integration with More Electric Aircraft DC Distribution Network Using Phase Shifted High Power Bidirectional DC-DC Converter**, Mohd Tariq; Ali Maswood; Chandana Gajanayake; Gabriel H. P. Ooi; Pradip Chatterjee; Sandeep Madishetti; Devinda Molligoda; Amit Kumar Gupta, Singapore.

### Session 5: ELECTRICITY MARKET

Room: P4

**Time: 11:00 – 12:30,  
Presentations**

**Chair: Prof. Mohsen Parsa Moghaddam, Tarbiat Modares University**

**PES-APPEEC-209, Rethinking Business Models for Network Service Providers – Shadow Pricing against Storage**, Jenny Riesz; Joel Gilmore, Australia.

**PES-APPEEC-031, A Stress Testing Analysis on China's Power Market in the Future Under the New Power Reform Policy**, Peng Li; Qiuyan Li; Lili Wang; Yong Guo; Xiangrui Kong; Dong Han; Zheng Yan; Yiqun Song, China.

**PES-APPEEC-073, Day-ahead Scheduling Strategy of Virtual Power Plant under Uncertainties**, Songli Fan; Qian Ai, China.

**PES-APPEEC-072, Day-ahead Energy Optimal Scheduling of Household Microgrid Considering the User Satisfaction**, Feng GAO; Wei Tang, China.

**PES-APPEEC-180, Planning in the Australian National Electricity Market - Challenges and Opportunities**, Neil Raffan; Anna Bruce; Lain MacGill, Australia.

**PES-APPEEC-196, Renewable Energy Integration in Indian Electricity Market**, Kaushik Dey; S.S. Barpanda; S.C. Saxena; Harish Rathour; K V N Pawan Kumar, India.

### Session 6: TRANSFORMER AND ASSET MANAGEMENT

Room: P5

**Time: 11:00 – 12:30,  
Presentations**

**Chair: Prof. Shengchang Ji, Xi'an Jiaotong University**

**PES-APPEEC-122, How is Climate Change Likely to Affect Queensland Electricity Infrastructure into the Future?**, Erin Oliver; Daniel Martin; Olav Krause; Simon Bartlett; Craig Froome, Australia.

**PES-APPEEC-084, Developing Simplified Thermal Models for 11 kV Underground Cables in Australia**, Johnathon Fulcher; Daniel Martin; Olav Krause; Greg Caldwell, Australia; Simon Rowland; Ognjen Marjanovic, UK.

**PES-APPEEC-249, Vibration Measurement and Signal Processing for Condition Assessment of OLTC of Transformer**, Junhyuck Seo; Hui Ma; Tapan Saha, Australia.

**PES-APPEEC-162, Multi-objective Optimal Control Strategy of Thyristor Controlled Transformer for Power Quality Improvement**, Xue Feng; Yuankai Wang; Xuchong Wang; Wei Gu, China.

**PES-APPEEC-212, Simulation Analysis of Power-frequency Electromagnetic Field Interference on Smart Meters**, Yunan Zhu; Jian Liu; Qing Xu; Qifeng Huang, China.

**PES-APPEEC-239, Towards a Best Practice Asset Management Framework for Electrical Power Distribution Organisations**, Sohail Abdul Khaliq; Muhammad nateque Mahmood; Narottam Das, Australia.

## TECHNICAL TOURS

### **University of Queensland Gatton Solar Research Facility**

The University of Queensland has the largest solar research facility in the southern hemisphere at universities Gatton campus. The 3.275 megawatt Gatton Solar Research Facility comprises more than 37,000 thin-film photovoltaic panels, mounted on the campus's 10ha former airstrip. The development is funded by a \$40.7 million Federal Government Education Investment Fund program grant administered by the Department of Education. For the first time in Australia, multiple PV mounting technologies including fixed-tilt, single-axis and dual-axis tracker technologies are in operation side-by-side in the same field. From this site visit you will get firsthand experience with Universities solar research capability.

**Tour details:** Pick up from BCEC at 14:00; Travel time: Approximately 1 hour; Drop off at BCEC at 17:30.

### **Australian Energy Market Operator Control Centre**

As the National Energy Market Operator and planner, Australian Energy Market Operator (AEMO) plays an important role in supporting the industry to deliver a more integrated, secure, and cost effective national energy supply. AEMO operates the energy markets and systems and also delivers planning advice in eastern and south-eastern Australia. AEMO control room facilitates operating National Electricity Market (NEM). This visit will provide insights to the NEM and operational challenges associated with NEM.

**Tour details:** Pick up from BCEC at 14:00; Travel time: 20 minutes; Drop off at BCEC at 16:00.

### **Noja Power**

NOJA Power's vision is to be the world leader in medium-voltage outdoor switchgear. The company has moved towards achieving that vision with the installation of more than 35,000 NOJA Power OSM series Automatic Circuit Reclosers in over 84 countries worldwide. NOJA Power's head office and global manufacturing facility is based in Brisbane city where your tour will be conducted. Please wear closed in shoes as you will be taken through our production lines, engineering workshops and test facilities.

**Tour details:** Pick up from BCEC at 14:00; Travel time: Approximately 20 minutes; Drop off at BCEC at 17:00.

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