CIGRE Australia Power Electronics and Power System Integration Seminar

Pullman Sydney Hyde Park | **29-30 October 2024**

CIGRE Australia is conducting its first seminar exploring the issues and challenges associated with the high penetration of power electronic interfaced devices on the power system. This seminar is an industry-wide discussion on existing and emerging challenges associated with the technical aspects of power system performance, modelling, analysis, protection and control, and operation in a changing power system environment, and with the evolution of power electronic devices.

In addition to our presentations from industry and academia, the seminar is proposing a high level of delegate interaction through facilitated discussions. Over the two days you will enjoy keynote addresses, presentations, discussion sessions, a networking function and concluding with a panel session.

Program Outline

Day 1 - 29 October 2024

Keynote Presentations
Mr Bernard Norton, Country Managing Director, Hitachi Energy Australia
Ms Merryn York, Executive General Manager - System Design, AEMO
Mr Damien Sanford, Chief Operating Officer, Tilt Renewables

Three 90-minute interactive presentation and discussion sessions

Networking function at the conclusion of Day 1

Day 2 - 30 October 2024

Three 90-minute interactive presentation and discussion sessions

CIGRE Paris Session 2024 – An International Perspective

Early-bird registration is open to 15 September 2024
Members $595/Non-members $795

Standard pricing applies from 16 September 2024
Members $795/Non-members $995

Full time students benefit from a special discount rate of $395

Places are limited and subject to availability. Early registration is recommended.

Scan to Register or for more information

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SEMINAR SCHEDULE

DAY 1 - TUESDAY 29th OCTOBER

	TIME	EVENT
	8.00am - 9.00am	REGISTRATION
SESSION 1	9.00am - 10.30am	KEYNOTE PRESENTATIONS OPENING and WELCOME **The Energy Transition – A Global Supplier's Perspective** Bernard Norton, Country Managing Director, Hitachi Energy Australia **Navigating the Power System Transition to Renewables** Merryn York, Executive General Manager System Design, AEMO **Ensuring Long-Term Viability in the Rapid Energy Transition** Damien Sanford, Chief Operating Officer, Tilt Renewables
	10.30am - 11.00am	MORNING TEA
SESSION 2	11.00am - 12.30pm	THE ROLE OF POWER ELECTRONIC CONVERTERS TO FACILITATE ENERGY TRANSITION **The Need for Advanced Power Electronics to Stabilise and Operate the Grid** *Presenter:* Stephen Sproul, Hitachi Energy Australia **Impact of Hydro Power Electronic Converters on Grid Infrastructure** *Presenter:* Dennis Albert, OMICRON **Virtual Arm Impedance Emulation and Stability Improvement in Modular Multilevel Converters** *Presenter:* Ye Zhu, University of NSW **Hydrogen Rectifiers: Supporting AEMO Ancillary Services and Future Grid Stability Trends** *Presenter:* Zabir Uddin Syed, Vena Energy **Beyond Hydrogen Production: Unleashing the Potential of Electrolysers for Enhanced Power System Stability** *Presenter:* Mehdi Dozien, Monash University **Advanced Power Electronics Stabilising the Grid - Solutions and Case Studies** *Presenter:* Stephen Sproul, Hitachi Energy Australia
	12.30pm - 1.30pm	LUNCH
SESSION 3	1.30pm - 3.00pm	POWER SYSTEM STABILITY PHENOMENA, COUNTERMEASURES AND EMERGING ASSESSMENT TOOLS **Impedance-Based Stability Analysis: A Tool for Enhancing Grid Stability in Inverter-Dominated Power Systems** *Presented by:* Behrooz Bahrani, Monash University **Analysis of an Oscillation Event Caused by an Inverter-based Renewable Energy Plant** *Presented by:* Richard Yan, University of Queensland **Real-time Oscillation Source Location to Enhance Power System Reliability under High Penetration of Inverter-based Resources** *Presented by:* Thai Anh Tran, AusRE Solutions **Addressing SSCI Instability Issues of IBR Integration in Weak AC Grids: The East Gippsland Case** *Presented by:* Emma Wang, AusNet **Current Limiting Design and Synchronisation Stability Analysis of Grid-forming Converters** *Presented by:* Georgios Konstantinou, University of NSW **Latest Learnings when Connecting Inverter Based Resources into the NEM** *Presented by:* Greg Elkins, Global Power Energy

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SEMINAR SCHEDULE

DAY 1 - TUESDAY 29th OCTOBER

	TIME	EVENT
	3.00pm - 3.30pm	AFTERNOON TEA
SESSION 4	3.30pm - 5.00pm	POWER SYSTEM TECHNICAL PERFORMANCE REQUIREMENTS, MEASUREMENTS AND COMPLIANCE TESTING **Harmonic R2 Testing of IBR Systems** *Presenter:* Don Geddey, Transgrid **Turning Generator Compliance Management into an Advantage: Insights for Network Operators and Asset Owners** *Presenter:* Aditya Upadhye, Gridwise Energy Solutions **System Strength Requirements for Loads** *Presenter:* Simon Windsor, Global Power Energy **Definition of the System Strength Technical Envelope** *Presenter:* Darren Spoor, AEMO **The connection process and technical performance standard framework - What can be changed to support our energy transition** *Presenter:* Hieu Nguyen, Mint Renewables **Developing a Convergence-based Method to Calculate NEM Inertia** *Presenter:* Morteza Alizadeh, AEMO **Impact of evolving modelling, analysis and information requirements on generator connection process** *Presenter:* Gratian Punchiwedikkarage, APA
	5.00pm - 6.30pm	NETWORKING

DAY 2 - WEDNESDAY 30th OCTOBER

	TIME	EVENT
SESSION 5	9.00am - 10.30am	POWER SYSTEM OPERATIONAL EXPERIENCES AND OPPORTUNITIES **A Battery Success Story – Unintentional Islanding on 13th February 2024** *Presenter:* Andrew Groom, AEMO **Changing Power Factor and Interaction with Power Transformers** *Presenter:* Dan Martin, Essential Energy **Power Electronics and Economics of FCAS** *Presenter:* Christian Jensen, Global Power Energy **Managing Voltage Issues on the LV Network** *Presenter:* Matthew Jolliffe, Ausgrid **Connecting Solar Farms to Grids - Evaluating Power Transformer Performance** *Presenter:* Dan Martin, Essential Energy **Enhancing Grid Stability with Fly Wheel Technology: Synchronous Condensers and Fly Wheel Security** *Presenter:* Pedro Lopez, ABB
	10.30am - 11.00am	MORNING TEA

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SEMINAR SCHEDULE

DAY 2 - WEDNESDAY 30th OCTOBER

	TIME	EVENT
SESSION 6	11.00am - 12.30pm	**POWER SYSTEM DYNAMIC AND HARMONIC MODELLING AND NUMERICAL ANALYSIS** **Selected Topics from Australian Research on Global Power System Transformation Symposium** *Presenter:* Thomas Brinsmead, CSIRO **Growing Need for Small-signal Stability Studies in Power Systems with a High Share of Inverter-based Resources** *Presenter:* Navid Aghanoori, Transgrid **The Amplification Factor Paradox: Revisiting First-principles Assessment of New Grid Connection Impact on Harmonic Distortion** *Presenter:* Tony Morton, Vysus Group **Comparison of AFL and EMT Methods for Assessment of System Strength Requirements** *Presenter:* Nick Jatan, Tasnetworks **Optimal Design and Modelling of Collector Systems for Large-scale Renewable Energy Projects** *Presenter:* Shabir Ahmadyar, KPMG Australia **Overcoming Challenges in Dynamic Modelling for Renewable Energy Integration in New Zealand** *Presenter:* Snehalkumar Joshi, Transpower
	12.30pm - 1.30pm	**LUNCH**
SESSION 7	1.30pm - 3.00pm	**POWER SYSTEM MODELLING, PERFORMANCE ASSESSMENTS, CHALLENGES, AND OPPORTUNITIES ASSOCIATED WITH DISTRIBUTED RESOURCES** **Modelling the Impacts of Distributed Resources on Transmission System Security** *Presenter:* Pat Graham, AEMO **PSSE UFLS Model for Load and DPV Shedding** *Presenter:* Sam Nelson, APD **Prevention of MV Feeders with High Penetration of Residential PV from Tripping Off During an UFLS Event** *Presenter:* Firman Barus, Western Power **Overvoltage control on networks with a high penetration of solar PVs** *Presenter:* Ben Bates, Essential Energy **Distributed Energy Resource Management System Development** *Presenter:* Ashley Niebling, SA Power Networks **Flexible Exports Compliance** *Presenter:* Michael Brown, SA Power Networks
	3.00pm - 3.30pm	**AFTERNOON TEA**
SESSION 8	3.30pm - 4.30pm	**CIGRE PARIS SESSION 2024 - AN INTERNATIONAL PERSPECTIVE** **DC Systems and Power Electronics** *Presenter:* John Wright-Smith, Convenor Australian Panel B4 **Protection and Automation** *Presenter:* Rob Coggan, Convenor Australian Panel B5 **Power System Operation and Control** *Presenter:* Tjaart Van der Walt, Convenor Australian Panel C2 **Power System Technical Performance** *Presenter:* Babak Badrzadeh, Convenor Australian Panel C4
	4.30pm	**SEMINAR CLOSE**