CIGRE 2025 International Symposium

Conference & Exhibition

Palais des congrès de Montréal, Canada • September 29–October 3, 2025

www.cigre.ca

Host Utility:

Hydro Québec

Premiere Sponsor:

SEDIVER

Welcome Message From the General Chair

Claudine Bouchard
President & CEO of Hydro-Québec

On behalf of Hydro-Québec and on my own behalf, I am delighted to welcome you to Montréal for the CIGRE 2025 International Symposium.

This year’s theme is **“Grid Enhancement, Strategic Planning, Technological Innovation and Climatic Adaptation for Resilient Future Energy Systems.”** These timely topics are sure to prove stimulating and remind us that collective intelligence, collaboration and knowledge-sharing are essential assets that will help us face our common challenges regarding the evolution of the power grid.

A strategic forum like the CIGRE Symposium gives us the opportunity to reflect and work together to shape an industry undergoing profound change, driven by technological acceleration. We must speed up our transformation to meet major challenges, such as responding to the needs and expectations of our customers, as well as keeping pace with evolving energy requirements in a global context marked by turbulence. Our organizations share significant responsibilities in fulfilling the historic mandate entrusted to us: achieving a successful energy transition.

We will have the chance to delve into the use of powerful tools, including artificial intelligence, that have the potential to revolutionize our ways of doing things. The importance of integrated strategic planning will be central to our discussions: a comprehensive view will allow us to make the best choices for the future.

Clear signals demonstrate the urgent need for a decisive shift to renewable energy sources. The time to act is now! This urgency is at the core of Hydro-Québec’s ambitious Action Plan 2035 – Towards a Decarbonized and Prosperous Québec, which we’d love to share with you.

We look forward to welcoming you to Montréal this fall, where meaningful discussions will help shape our energy future.

See you soon!

Claudine Bouchard
President and Chief Executive Officer of Hydro-Québec

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Welcome Message From the Conference Chair

Pierre Van Dyke
Senior Research Scientist
Hydro-Quebec

On behalf of CIGRE Canada and Hydro-Québec, we are honored to invite you to join us for the CIGRE Symposium 2025, taking place in Montreal, Canada, from September 29 to October 3, 2025, at the Palais des Congrès.

The theme of the Symposium is:

"Grid Enhancement, Strategic Planning, Technological Innovation and Climatic Adaptation for Resilient Future Energy Systems"

This Event is primarily supported by eleven CIGRE Study Committees:

- **A1** Power generation and electromechanical energy conversion
- **A2** Power transformers and reactors
- **A3** Transmission and distribution equipment
- **B2** Overhead lines
- **B3** Substations and electrical installations
- **B4** DC systems and power electronics
- **C1** Power system development and economics
- **C3** Power system sustainability and environmental performance
- **C4** Power system technical performance
- **C5** Electricity markets and regulation
- **C6** Active distribution systems and distributed energy resources

With the support of the other Study Committee Chairs, we have accepted papers from all CIGRE Study Committees. Additionally, the **EHV and UHV, AC & DC Conference** will also be part of the Symposium.

As a result, **600 papers** will be presented by authors from **46 countries.**

This Symposium offers a unique opportunity to network through the many events outlined in the following program. In today's rapidly evolving environment, participating in this Event is essential for discussing and sharing new knowledge, through Paper Sessions, Tutorials, Workshops, and Panel discussions addressing current challenges and proposing innovative solutions.

We look forward to Welcoming you to Montreal in 2025!

Warm Regards,

Pierre Van Dyke, Hydro-Quebec Senior Research Scientist (IREQ, Canada)
Chair CIGRE Study Committee B2 - Overhead lines

CIGRE Domains of Work

CIGRE works within 16 domains of work, each with its own expert global Study Committee and programme of work. This is the 'engine room' that drives CIGRE's power system knowledge development and covers the key technical domains of the Power System.

Group A – Equipment

- **A1** Power generation and electromechanical energy conversion
- **A2** Power transformers and reactors
- **A3** Transmission and distribution equipment

Group B – Technologies

- **B1** Insulated cables
- **B2** Overhead lines
- **B3** Substations and electrical installations
- **B4** DC systems and power electronics
- **B5** Protection and automation

Group C – Systems

- **C1** Power system development and economics
- **C2** Power system operation and control
- **C3** Power system sustainability and environmental performance
- **C4** Power system technical performance
- **C5** Electricity markets and regulation
- **C6** Active distribution systems and distributed energy resources

Group D – New Materials and IT

- **D1** Materials and emerging test techniques
- **D2** Information systems telecommunications and cybersecurity

Committees

General Chair

Claudine Bouchard	President & CEO, Hydro-Québec

Symposium Steering Committee

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Konstantin Papailiou	CIGRE President
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Mélanie Destrempes	Hydro-Québec
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Phil Zinck	Past CIGRE Canada Chair
Angela Driver	Past CIGRE Canada Conference Chair
David Flandin	Pro4events
Wai Ling Chong	Pro4events
Sandrine Huchez	Pro4events
Marion Caumont	Pro4events

Women in Energy (WiE) Representatives :

Aimee Intac-Leung	CIGRE Canada WiE Chair
Solange David	CIGRE International WiE Chair
Silvia Prajescu	Hydro-Québec

Next Generation Network (NGN) Representatives :

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Conor Mulholland	CIGRE International NGN Chair
Aditie Garg	CIGRE International NGN Vice-Chair
Léo Tanguay	Hydro-Québec

Technical Committee Co-Chairs

Pierre Van Dyke	Chair SC B2
Joanne Hu	Chair SC B4

Participating Study Committees

Howard Sedding	Chair SC A1
Pascal Mueller	Chair SC A2
Nicola Gariboldi	Chair SC A3
Mark McVey	Chair SC B3
Antonio Iliceto	Chair SC C1
Mercedes Vazquez	Chair SC C3
Marta Val Escudero	Chair SC C4
Wayne Guttormson	Member SC C4
Yannick Phulpin	Chair SC C5
Kurt Dedekind	Chair SC C6
Stefan Tenbohlen	Chair EHV & UHV

Additional Study Committees

Geir Clasen	Chair SC B1
Volker Leitloff	Chair SC B5
Renuka Chatterjee	Chair SC C2
Simon Sutton	Chair SC D1
Victor Tan	Chair SC D2

Technical Reviewers

Download the app to see the last updated list of reviewers, or scan the QR code here:

cigre-exhibition.com/canada/list-of-reviewers-cigre-canada-2025

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For power system expertise

CIGRE 2025 International Symposium

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Access the Latest Updates on the App

For the most up-to-date information regarding the Technical Program, list of Speakers' line-up along with their Biographies, list of Exhibitors and Sponsors, Floor plan, and more, download the CIGRE 2025 Program via CVENT EVENTS APP.

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- Download the App: "**Cvent Events**"
- Search for: "**CIGRE International Symposium 2025**"
- Tap the icon to download the Event

All times are in EST - Eastern Standard Time (Montreal - Canada)

Schedule-at-a-Glance

BADGE PICK-UP - Level 2 | **CONFERENCE & EXHIBITION - Level 5**

	MONDAY, SEPTEMBER 29	TUESDAY, SEPTEMBER 30	WEDNESDAY, OCTOBER 1	THURSDAY, OCTOBER 2	FRIDAY, OCTOBER 3
Panels & Keynotes (Delegates only)		**MORNING** 06:30 - 08:00 Women in Energy Breakfast (pre-registration required) 08:00 - 09:00 OPENING CEREMONY (Delegates only) 09:00 - 10:00 BUSINESS PANEL (Delegates only) 12:00 - 13:15 Women in Energy Panel & Lunch (Delegates only)	**MORNING** 06:30 - 08:00 CEO Breakfast (By Invitation Only) 08:00 - 08:30 KEYNOTE (Delegates only) 08:30 - 10:00 CEO PANEL (Delegates only) 12:15 - 13:30 Next Generation Network Panel & Lunch (Delegates only)	**MORNING** 08:30 - 09:00 KEYNOTE (Delegates only) 09:00 - 10:00 CTO PANEL (Delegates only) **AFTERNOON** 12:15 - 13:30 REGULATORY Panel (Delegates only) 17:30 - 18:30 CLOSING SESSION KEYNOTE PRIZE DRAW (open to ALL)	
Tutorials (Delegates only)	**MORNING** 08:00 - 10:30 A3 B4 08:00 - 12:00 B3 12:30 - 14:00 B2 **AFTERNOON** 14:00 - 16:00 A2 16:30 - 18:00 C1	**MORNING** 10:00 - 12:00 B4	**AFTERNOON** 16:30 - 18:00 EHV & UHV	**AFTERNOON** 14:00 - 15:30 B4 16:00 - 17:30 A1	
Workshops (Delegates only upon specific registration)	**MORNING** 08:00 - 09:30 C5 11:00 - 12:30 HITACHI ENERGY 11:00 - 12:30 SIEMENS ENERGY **AFTERNOON** 14:00 - 18:00 C4		**MORNING** 10:30 - 12:15 SIEMENS	**MORNING** 10:30 - 12:15 A3 B5 **AFTERNOON** 13:30 - 17:00 B2	
Paper Presentations (Delegates only)	**MORNING** 08:00 - 12:30 B2 C6 **AFTERNOON** 12:30 - 14:00 NGN SESSION 1 14:00 - 18:00 A1 A3 B2 B3 B4 C6	**MORNING** 10:30 - 12:00 A2 A3 C1 C4 C5 C6 10:30 - 13:00 B2 **AFTERNOON** 13:30 - 18:00 A1 A2 A3 B3 C1 C4 C5 C6 13:15 - 18:45 B4 13:30 - 18:45 B2	**MORNING** 10:30 - 12:15 A1 A2 A3 B3 B4 C1 C4 C5 10:30 - 13:00 B2 **AFTERNOON** 13:30 - 18:00 A2 B2 B5 C1 C2 C5 EHV & UHV >15:00 13:30 - 15:30 A1 A3 B3 C4 13:30 - 17:30 B4 16:00 - 16:30 EHV	**MORNING** 10:30 - 12:15 A2 B1 B2 B4 B5 C2 C3 D1 12:15 - 13:30 B2 **AFTERNOON** 13:30 - 15:30 B1 B5 C2 D2 14:00 - 15:30 NGN SESSION 2 16:00 - 17:30 B5 D2	**TECHNICAL VISITS** (pre-registration required)
Exhibition (Open to ALL)	18:00 - 20:00 EXHIBITION	08:00 - 19:00 EXHIBITION	08:00 - 20:00 EXHIBITION	08:00 - 17:00 EXHIBITION	
Main Social Events	18:00 - 20:00 Welcome Reception (Open to ALL)		18:30 - 20:00 Cocktail Reception (Open to ALL) 20:00 - 22:30 Gala Dinner (Delegates Only)	17:30 - 18:30 CLOSING SESSION Keynote Speech Prize Draw (Open to ALL) 19:00 - 22:30 Next Generation Network Reception Intercontinental Hotel "La Terrasse Nordheimer" (pre-registration required)	

Networking events open to All

MONDAY		TUESDAY		WEDNESDAY		THURSDAY	
Breakfast	06:45 - 08:00	Breakfast	06:45 - 08:00	Breakfast	06:45 - 08:00	Breakfast	06:45 - 08:00
Coffee break	10:30 - 11:00	Coffee break	10:00 - 10:30	Coffee break	10:00 - 10:30	Coffee break	10:00 - 10:30
Lunch	12:30 - 14:00	Lunch	12:00 - 13:30	Lunch	12:15 - 13:30	Lunch	12:15 - 13:30
Coffee break	16:00 - 16:30	Coffee break	15:30 - 16:00	Coffee break	15:30 - 16:00	Coffee break	15:30 - 16:00
Welcome reception	18:00 - 20:00			Cocktail Reception	18:30 - 20:00	Closing Session	17:30 - 18:30

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Group D – New Materials and IT

- D1 Materials and emerging test techniques
- D2 Information systems telecommunications and cybersecurity

Detailed Schedule

PRE-SHOW BADGE PICK UP **SATURDAY, SEPTEMBER 27:** 13:00 - 17:00 **SUNDAY, SEPTEMBER 28:** 08:00 - 20:00

MONDAY, SEPTEMBER 29

TIME						
06:30	20:00	Badge Pick Up — LEVEL 2				
06:45	08:00	Breakfast (Open to ALL) — PLENARY ROOM - LEVEL 5				
08:00	10:30	**TUTORIAL** A3 — Room 519a A3.45 Methods for determining the frequency response characteristics of voltage measurement systems - basics, requirements, performance, mathematical and measurement identification On-site calibration and verification of the accuracy of instrument transformers	**TUTORIAL** B3 — Room 520e B3.53 Guidelines for Fire Risk Management in Substations' from TB 886	**TUTORIAL** B4 — Room 518bc B4.89 Condition Health Monitoring and predictive maintenance of HVDC Converter Stations	**SESSION 1** — Room 520ad 10 Paper Presentations: B2-1 TRANSMISSION TOWER INNOVATIONS AND ENGINEERING CHALLENGES	**SESSION 2** — Room 520b 11 Paper Presentations: C6-1 MICROGRID APPLICATIONS IN ACTIVE DISTRIBUTION SYSTEMS
				WORKSHOP C5 — Room 521abc 08:00 > 09:30 Retail Electricity Markets		
10:30	11:00	Networking Break (Open to ALL) — PLENARY ROOM - LEVEL 5				
11:00	12:30	**TUTORIAL** B3 — Room 520e 11:00 > 12:00 B3.55 - BESS Battery Energy Storage Solutions (TB 869)	**WORKSHOP** by Hitachi Energy — Room 520c Future of power transmission, emphasizing the transformative role of High-Voltage Direct Current (HVDC) technology in enabling resilient, flexible, and sustainable energy systems	**WORKSHOP** by Siemens Energy — Room 518a Decarbonizing District Heating: Canada's first Clean Air Installation and Advancements in SF6-Free Switching Technology	**SESSION 3** — Room 520ad 6 Paper Presentations: B2-2 CONDUCTOR DYNAMICS AND ENVIRONMENTAL IMPACT OF TOWERS	**SESSION 4** — Room 520b 6 Paper Presentations: C6-2 INNOVATIVE USES OF BATTERY STORAGE TO MANAGE DISTRIBUTION SYSTEMS
12:30	14:00	Lunch (Open to ALL) — PLENARY ROOM - LEVEL 5				
		TUTORIAL B2 — Room 520ad B2.84 Assessment of the methodologies to analyze wind induced overhead line conductors motion	**NGN KNOWLEDGE SHARING SESSION 1** — NGN SESSION 1 Room 519b Mind the Gap: Lessons from Experienced Professionals to the Next Generation			
14:00	16:00	**TUTORIAL** A2 — Room 520f Guide on Transformer Maintenance 2025 Edition	**SESSION 5** — Room 520c 8 Paper Presentations: A1-1 PARTIAL DISCHARGE, AI AND ML APPLICATIONS	**SESSION 6** — Room 519a 7 Paper Presentations: A3-1 RELIABILITY	**SESSION 7** — Room 520ad 8 Paper Presentations: B2-3 ADVANCES IN INSULATOR DESIGN AND DIAGNOSTICS FOR HIGH VOLTAGE TRANSMISSION - PART 1	**WORKSHOP** C4 — Room 524ab Role of wide-area EMT simulations in IBR-dominated power systems: needs and solutions
			SESSION 8 — Room 520e 8 Paper Presentations: B3-1 AI AND ROBOTIC APPLICATIONS FOR SUBSTATIONS	**SESSION 9** — Room 518bc 7 Paper Presentations: B4-1 HVDC/FACTS - INTERACTION AND COUPLING	**SESSION 10** — Room 520b 8 Paper Presentations: C6-3 PLANNING APPLICATIONS FOR IMPROVED DISTRIBUTION SYSTEM MANAGEMENT	
16:00	16:30	Networking Break (Open to ALL) — CORRIDOR BETWEEN ROOMS 518 & 521 - LEVEL 5				
16:30	18:00	**TUTORIAL** C1 — Room 519b C1.51 The potential roles of energy storage in electric power systems	**SESSION 11** — Room 520c 6 Paper Presentations: A1-2 PARTIAL DISCHARGE, AI AND ML APPLICATIONS	**SESSION 12** — Room 519a 5 Paper Presentations: A3-2 SF6 ALTERNATIVES	**SESSION 13** — Room 520ad 6 Paper Presentations: B2-4 CONDUCTOR ICING AND DE-ICING INNOVATIONS FOR TRANSMISSION LINE RELIABILITY	
			SESSION 14 — Room 520e 8 Paper Presentations: B3-2 MONITORING AND ASSET MANAGEMENT	**SESSION 15** — Room 518bc 6 Paper Presentations: B4-2 HVDC - PROJECT PLANNING, DESIGN AND TESTING	**SESSION 16** — Room 520b 6 Paper Presentations: C6-4 ACTIVE MANAGEMENT OF MODERN DISTRIBUTION SYSTEMS	
18:00	20:00	Exhibition — LEVEL 5				
		Welcome Reception (Open to ALL) — IN THE EXHIBITION				

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TUESDAY, SEPTEMBER 30

TIME						
06:30	19:00	Badge Pick Up — LEVEL 2				
06:30	08:00	**WOMEN IN ENERGY (WiE) BREAKFAST** "Building Networks for a Resilient Energy Future" (Pre-registration required) — ROOM 720 - LEVEL 7				
06:45	08:00	Breakfast (Open to ALL) — IN THE EXHIBITION				
08:00	19:00	Exhibition				
08:00	09:00	**OPENING CEREMONY** (Delegates only) — PLENARY ROOM				
09:00	10:00	**BUSINESS PANEL** "Navigating Business and Supply Chain Challenges in the Energy Transition" (Delegates only) — PLENARY ROOM				
10:00	10:30	Networking Break (Open to ALL) — IN THE EXHIBITION				
10:30	12:00	**TUTORIAL** B4 — Room 518bc 10:00 > 12:00 Protocol for reporting operational performance of HVDC Systems and FACTS	**SESSION 17** — Room 520f 5 Paper Presentations: A2-1 A2 POWER TRANSFORMER AND REACTOR: RENEWABLE ENERGY APPLICATIONS	**SESSION 18** — Room 519a 6 Paper Presentations: A3-3 SF6 REPLACEMENT IN SWITCHGEAR BY NATURAL ORIGIN GASES	**SESSION 19** — Plenary Room 10:30 > 13:00 9 Paper Presentations: B2-5 DLR AND WEATHER-DRIVEN INSIGHTS FOR TRANSMISSION LINE MANAGEMENT	
			SESSION 20 — Room 519b 6 Paper Presentations: C1-1 PS1: INTERCONNECTORS	**SESSION 21** — Room 521abc 4 Paper Presentations: C4-1 POWER QUALITY AND INSULATION CO-ORDINATION IN IBR DOMINATED SYSTEMS	**SESSION 22** — Room 518a 4 Paper Presentations: C5-1 C5 RETAIL MARKETS AND LOCAL COMMUNITIES	**SESSION 23** — Room 520b 6 Paper Presentations: C6-5 RELIABILITY AND RESILIENCE MEASURES FOR ACTIVE DISTRIBUTION SYSTEMS
12:00	13:30	Lunch (Open to ALL) — IN THE EXHIBITION				
		WOMEN IN ENERGY (WiE) PANEL & LUNCH "Key Technical Components for Strategic Planning" (Delegates only) — PLENARY ROOM				
13:30	15:30	**SESSION 24** — Room 520c 8 Paper Presentations: A1-3 CONDITION MONITORING & ASSESSMENT	**SESSION 25** — Room 520f 8 Paper Presentations: A2-2 A2 POWER TRANSFORMER AND REACTOR: ASSET MANAGEMENT	**SESSION 26** — Room 519a 7 Paper Presentations: A3-4 HVDC AND ASSET MANAGEMENT	**SESSION 27** — Plenary Room 8 Paper Presentations: B2-6 INNOVATIVE TOWER SOLUTIONS FOR HIGH-ALTITUDE, AGING, AND RENEWABLE GRIDS	**SESSION 28** — Room 520e 8 Paper Presentations: B3-3 SUBSTATION CONCEPTS
		SESSION 29 — Room 518bc 13:15 > 15:30 9 Paper Presentations: B4-3 HVDC - CONTROL, PROTECTION AND PERFORMANCE	**SESSION 30** — Room 519b 8 Paper Presentations: C1-2 PS1: RENEWABLE ENERGY SOURCES	**SESSION 31** — Room 521abc 6 Paper Presentations: C4-2 ADVANCED SIMULATION METHODS FOR STABILITY ANALYSIS IN IBR DOMINATED SYSTEMS (PART-1)	**SESSION 32** — Room 518a 6 Paper Presentations: C5-2 C5 DATA ANALYTICS WITH THE ELECTRICITY MARKETS	**SESSION 33** — Room 520b 5 Paper Presentations: C6-6 ENERGY EFFICIENCY APPLICATIONS IN BUILDINGS AND DISTRUBUTION SYSTEMS
15:30	16:00	Networking Break (Open to ALL) — IN THE EXHIBITION				
16:00	18:00	**SESSION 34** — Room 520c 8 Paper Presentations: A1-4 CONDITION MONITORING & ASSESSMENT	**SESSION 35** — Room 520f 11 Paper Presentations: A2-3 A2 POWER TRANSFORMER AND REACTOR: ARTIFICIAL INTELLIGENCE AND DIGITALIZATION	**SESSION 36** — Room 519a 7 Paper Presentations: A3-5 MISCELLANEOUS	**SESSION 37** — Plenary Room 16:00 > 18:45 11 Paper Presentations: B2-7 EMI, HVDC, CORONA, AND UPRATING INNOVATIONS	**SESSION 38** — Room 520e 8 Paper Presentations: B3-4 SUBSTATION CONCEPTS
		SESSION 39 — Room 518bc 16:00 > 18:45 10 Paper Presentations: B4-4 MULTITERMINAL HVDC	**SESSION 40** — Room 519b 8 Paper Presentations: C1-3 PS1: DEMAND & STORAGE	**SESSION 41** — Room 521abc 6 Paper Presentations: C4-3 ADVANCED SIMULATION METHODS FOR STABILITY ANALYSIS IN IBR DOMINATED SYSTEMS (PART-2)	**SESSION 42** — Room 518a 5 Paper Presentations: C5-3 C5 MARKETS & REGULATION TO SUPPORT RELIABLE & RESILIENT POWER SYSTEMS	**SESSION 43** — Room 520b 7 Paper Presentations: C6-7 FLEXIBILITY MANAGEMENT IN DISTRIBUTION SYSTEMS

SC/WG private meetings are on Levels 4 and Level 5.

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WEDNESDAY, OCTOBER 1

06:30 – 20:30 Badge Pick Up — LEVEL 2

06:30 – 08:00 **CEO BREAKFAST** (by Invitation Only) — LEVEL 7

06:45 – 08:00 Breakfast (Open to ALL) — IN THE EXHIBITION

08:00 – 20:00 Exhibition — LEVEL 5

08:00 – 08:30 **KEYNOTE** "Building the Future Energy System" (Delegates only) — PLENARY ROOM

08:30 – 10:00 **CEO PANEL** "The Power of Alignment" (Delegates only) — PLENARY ROOM

10:00 – 10:30 Networking Break (Open to ALL) — IN THE EXHIBITION

10:30 – 12:15

SESSION 44 — Room 520c
7 Paper Presentations:
A1-5 ASSET MANAGEMENT

SESSION 45 — Room 520f
5 Paper Presentations:
A2-4 A2 POWER TRANSFORMER AND REACTOR: ARCING FAULT CONTAINMENT

SESSION 46 — Room 519a
6 Paper Presentations:
A3-6 CIRCUIT BREAKER APPLICATION

SESSION 47 — Plenary Room
10:30 > 13:00
9 Paper Presentations:
B2-8 AI-DRIVEN INSPECTION AND MONITORING FOR OVERHEAD TRANSMISSION SYSTEMS

SESSION 48 — Room 520e
9 Paper Presentations:
B3-5 EHV & UHV AC AND DC SUBSTATION TOPICS

SESSION 49 — Room 518bc
6 Paper Presentations:
B4-5 MESHED AC/DC SYSTEMS

SESSION 50 — Room 519b
6 Paper Presentations:
C1-4 PS1: CONGESTION, CURTAILMENT, RELIABILITY, ADEQUACY & UNCERTAINTY

SESSION 51 — Room 521abc
6 Paper Presentations:
C4-4 ADVANCED SIMULATION MODELS FOR ANALYSIS OF IBR DOMINATED SYSTEMS

SESSION 52 — Room 518a
5 Paper Presentations:
C5-4 C5 FLEXIBILITY INTEGRATION INTO ELECTRICITY MARKETS

WORKSHOP by Siemens Canada
Room 520ad
Smarter, Stronger Grids: Tackling Capacity & Reliability with Siemens Innovation

12:15 – 13:30 Lunch (Open to ALL) — IN THE EXHIBITION

NEXT GENERATION NETWORK (NGN) PANEL & LUNCH (Delegates only) — PLENARY ROOM
"Driving Innovation in the Energy Industry: Lessons from the Past & Opportunities for the Future"

13:30 – 15:30

SESSION 53 — Room 520c
7 Paper Presentations:
A1-6 ASSET MANAGEMENT

SESSION 54 — Room 520f
7 Paper Presentations:
A2-5 A2 POWER TRANSFORMER AND REACTOR: MATERIALS AND ENVIRONMENT

SESSION 55 — Room 519a
8 Paper Presentations:
A3-7 INSTRUMENT TRANSFORMERS

SESSION 56 — Plenary Room
8 Paper Presentations:
B2-9 HTLS CONDUCTOR AND SMART INSTALLATION FOR GRID RESILIENCE

SESSION 57 — Room 520e
2 Paper Presentations:
B3-6 EHV & UFV AC AND DC SUBSTATION TOPICS

SESSION 58 — Room 522a
6 Paper Presentations:
EHV & UHV 13:30 > 15:00
OPERATION AND MAINTENANCE OF EHV EQUIPMENT

SESSION 59 — Room 518bc
8 Paper Presentations:
B4-6 FACTS - APPLICATION, DESIGN, CONTROL AND PERFORMANCE

SESSION 60 — Room 520b
5 Paper Presentations:
B5-1 FAULT LOCATION, AUTORECLOSING, CONTROLLED SWITCHING, WIDE-AREA MEASUREMENTS

SESSION 61 — Room 519b
8 Paper Presentations:
C1-5 PS1/2: HYDROGEN, HEAT, MULTI-ENERGY SYSTEMS & PLANNING

SESSION 62 — Room 520ad
7 Paper Presentations:
C2-1 ADVANCED CONTROL, OPTIMIZATION, AND RESILIENCE IN MODERN POWER SYSTEMS

SESSION 63 — Room 521abc
7 Paper Presentations:
C4-5 ADVANCED STABILITY SUPPORT CAPABILITIES FOR IBR DOMINATED SYSTEMS

SESSION 64 — Room 518a
6 Paper Presentations:
C5-5 C5 WHOLESALE MARKET SETTLEMENT AND PRICING

15:30 – 16:00 Networking Break (Open to ALL) — IN THE EXHIBITION

16:00 – 18:00

SESSION 65 — Room 520f
8 Paper Presentations:
A2-6 POWER TRANSFORMER AND REACTOR: MONITORING, TESTING AND DIAGNOSTICS

SESSION 66 — Room Plenary Room
8 Paper Presentations:
B2-10 ADVANCES IN INSULATOR DESIGN AND DIAGNOSTICS FOR HIGH VOLTAGE TRANSMISSION - PART 2

SESSION 67 — Room 518bc
16:00 > 17:30
6 Paper Presentations:
B4-7 HVDC/FACTS - RELIABILITY, PERFORMANCE MONITORING AND CYBERSECURITY

PAPER & TUTORIAL — Room 522a
EHV: Geomagnetic Induced Currents (GIC) and
A2 TUTORIAL: Effects of DC Bias on Power Transformers

SESSION 68 — Room 520b
8 Paper Presentations:
B5-2 EXPERIENCE WITH FULLY DIGITAL PACS

SESSION 69 — Room 519b
11 Paper Presentations:
C1-6 PS2/3. ASSET MANAGEMENT, PMUS, VPPS & CLIMATE CHANGE

SESSION 70 — Room 520ad
7 Paper Presentations:
C2-2 RESILIENT GRID OPERATIONS: FROM CONTROL STRATEGIES TO INTELLIGENT DECISION SUPPORT

SESSION 71 — Room 518a
7 Paper Presentations:
C5-6 SCHEMES TO SUPPORT THE ENERGY TRANSITION

18:30 – 20:00 **COCKTAIL RECEPTION** (open to ALL) — IN THE EXHIBITION

20:00 – 22:30 **GALA DINNER** (Registered Delegates only) — PLENARY ROOM
Presentation of the 11 Best Overall Papers

Conferences are open ONLY to registered Delegates.
Program last updated on September 08, 2025. Papers, Titles and Speakers are subject to change at any time. **Latest updates available on the CIGRE 2025 APP.**

CIGRE 2025 International Symposium Palais des congrès de Montréal, Canada • September 29 to October 3, 2025
All times are in EST - Eastern Standard Time (Montreal - Canada)

THURSDAY, OCTOBER 2

06:30 – 17:00 Badge Pick Up — LEVEL 2

06:45 – 08:00 Breakfast (Open to ALL) — IN THE EXHIBITION

08:00 – 17:00 Exhibition — LEVEL 5

08:30 – 09:00 **KEYNOTE** "A Weather Foundation Model for the Power Grid" (Delegates only) — PLENARY ROOM

09:00 – 10:00 **CTO PANEL** "Artificial Intelligence in Electrical Grid" (Delegates only) — PLENARY ROOM

10:00 – 10:30 Networking Break (Open to ALL) — IN THE EXHIBITION

10:30 – 12:15

WORKSHOP A3 + B5 — Room 519a
Digitalization of Switchgear: Implementation experience and integration with the protection world

SESSION 72 — Room 520f
7 Paper Presentations:
A2-7 POWER TRANSFORMER AND REACTOR: MODELLING

SESSION 73 — Room 518a
6 Paper Presentations:
B1-1 SMART DIAGNOSTICS AND CLIMATE-RESILIENT STRATEGIES FOR CABLE SYSTEMS

SESSION 74 — Plenary Room
7 Paper Presentations:
B2-11 INNOVATIVE FOUNDATIONS AND MATERIALS FOR RESILIENT TRANSMISSION TOWERS

SESSION 75 — Room 518bc
4 Paper Presentations:
B4-8 APPLICATION OF REALTIME SIMULATION AND HARDWARE IN LOOP IN HVDC/FACTS/IBRS

SESSION 76 — Room 520b
8 Paper Presentations:
B5-3 RENEWABLE ENERGY AND APPARATUS PROTECTION

SESSION 77 — Room 519b
4 Paper Presentations:
C2-3 OPERATIONAL STRATEGIES AND TOOLS FOR ENHANCING GRID RESILIENCE AND MANAGEMENT

SESSION 78 — Room 520e
6 Paper Presentations:
C3-1 TECHNOLOGY INNOVATION, STUDIES, AND SOLUTIONS FOR A MORE SUSTAINABLE AND RESILIENT POWER SYSTEM

SESSION 79 — Room 522a
2 Paper Presentations:
D1-1 INNOVATIVE SOLUTIONS FOR PD MITIGATION AND ECO-FRIENDLY INSULATION IN HV SYSTEMS

SESSION 80 — Room 521abc
12:15 > 13:30
5 Paper Presentations:
B2-12 AI AND SMART GRID SOLUTIONS: FROM LIVE WORKING TO WILDFIRE DETECTION

12:15 – 13:30 Lunch (Open to ALL) — IN THE EXHIBITION

REGULATORY PANEL C5 "Regulatory Frameworks and Market Integration for Assets under Non-Firm Grid Connection" (Delegates only) — PLENARY ROOM

13:30 – 15:30

WORKSHOP B2 — Plenary Room
Adapting Design Practices: Evolving Requirements for Overhead Transmission Line Structures (2000-2025)

SESSION 81 — Room 518a
6 Paper Presentations:
B1-2 INNOVATIONS AND MONITORING IN HV/MV CABLE SYSTEMS

SESSION 82 — Room 520b
8 Paper Presentations:
B5-4 LINE PROTECTION

SESSION 83 — Room 519b
6 Paper Presentations:
C2-4 ADVANCED METHODS FOR STABILITY AND RESERVE MANAGEMENT IN RENEWABLE POWER SYSTEMS

TUTORIAL B4 — Room 518bc
14:00 > 15:30
Operation and maintenance of HVDC and FACTS Facilities

SESSION 84 — Room 522a
8 Paper Presentations:
D2-1 CYBERSECURITY AND SMART COMMUNICATIONS FOR RESILIENT POWER GRIDS

NGN KNOWLEDGE SHARING SESSION 2 — NGN SESSION 2
Room 519a 14:00 > 15:30
NGNs Around The World

15:30 – 16:00 Networking Break (Open to ALL) — IN THE EXHIBITION

16:00 – 17:30

TUTORIAL A1 — Room 520f
The blackout of the Iberian Peninsula on April 28, 2025

WORKSHOP B2 — Plenary Room
16:00 > 17:00
Adapting Design Practices: Evolving Requirements for Overhead Transmission Line Structures (2000-2025)

SESSION 85 — Room 520b
7 Paper Presentations:
B5-5 COMMISSIONING, TESTING, SETTING AND CONFIGURATION

SESSION 86 — Room 522a
6 Paper Presentations:
D2-2 AI-DRIVEN INNOVATION AND CYBERSECURITY IN MODERN POWER GRIDS

17:30 – 18:30 **CLOSING SESSION** (open to ALL) — PLENARY ROOM
Keynote + Award of the Best Papers Overall and Prize Draw

19:00 – 22:30 **NEXT GENERATION NETWORK (NGN) RECEPTION** (pre-registration required) — INTERCONTINENTAL MONTREAL HOTEL – LA TERRASSE NORDHEIMER
Award Presentation of the 11 Best NGN Papers
Award Presentation of the 11 Best Student Papers
360, St-Antoine Street West, Montreal

FRIDAY, OCTOBER 3

SEE DETAILS ON **PAGE 46**

TECHNICAL VISITS (pre-registration required, for Delegates only) — HALL VIGER - LEVEL 2

Beauharnois Generating Station and **Hydro-Québec's Research Institute (IREQ)**

For the registered Participants, **the buses will depart from the Palais des Congrès**, returning to the same location
Meeting point: Pick-up badge desk HALL VIGER LEVEL 2

Participants must present **identification** to board the bus: **PASSPORT** (a driving licence is sufficient for Canadian residents)

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Conference Program
DELEGATES ONLY

TUESDAY, SEPTEMBER 30 06:30 – 08:00 — ROOM 720 - LEVEL 7

WiE BREAKFAST (PRE-REGISTRATION REQUIRED)
Building Networks for a Resilient Energy Future

WELCOME ADDRESS:
Aimee Intac-Leung, Director Transmission Project Management, Invenergy, and CIGRE Canada Women in Energy and USNC Vice Chair - Intl Partnerships

PRESENTED BY:
Carla Vicente, Country Managing Director, Hitachi Energy (Canada)
Isabelle Galarneau, EMT Studies Engineer, Hydro Quebec (Canada)
Solange David, Advisory Council Member, Norte Energia, Lawyer and CIGRE International Chair, Women in Energy (Brazil)

SPONSORED BY:
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Aimee Intac-Leung


Carla Vicente


Isabelle Galarneau


Solange David

TUESDAY, SEPTEMBER 30 08:00 – 09:00 — PLENARY ROOM - LEVEL 5

OPENING CEREMONY

PRESENTED BY:
Pierre Van Dyke, General Chair CIGRE Montreal Symposium (Canada)
Joanne Hu, Technical Co-Chair CIGRE Montreal Symposium (Canada)
Konstantin O. Papailiou, President of CIGRE
Claudine Bouchard, President & CEO, Hydro-Québec (Canada)

MODERATOR:
Michael Kobzar, Secretary and Treasurer of CIGRE Canada


Pierre Van Dyke


Konstantin O. Papailiou


Claudine Bouchard


Michael Kobzar


Joanne Hu

TUESDAY, SEPTEMBER 30 09:00 – 10:00 — PLENARY ROOM - LEVEL 5

BUSINESS PANEL
Navigating Business and Supply Chain Challenges in the Energy Transition

This year's panel brings together global thought leaders and industry pioneers for a high-impact discussion on the complexities and opportunities presented by the global shift towards sustainable energy. The session will explore strategic approaches to overcoming supply chain disruptions and leveraging innovation to drive business growth in the evolving energy landscape.

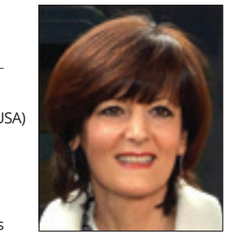
PRESENTED BY:
Cleber Angelo, Executive Vice President & Head of the Americas, Sediver (USA)
Bruno Melles, Executive Vice President & Managing Director of the Transformers Business Unit, Hitachi Energy (Switzerland)
Faisal Kazi, President & CEO, Siemens (Canada)
Cinzia Farisè, Executive Vice President Power Grid, Prysmian (Italy)
Marco De Freitas Barbosa, Vice President Grid Technologies, Siemens Energy (Canada)

MODERATOR:
Jim Kilpatrick, Global Leader Supply Chain and Network Operations Consulting, Deloitte (Canada)


Cleber Angelo


Bruno Melles


Faisal Kazi


Cinzia Farisè


Marco De Freitas Barbosa


Jim Kilpatrick

TUESDAY, SEPTEMBER 30 12:00 – 13:15 — PLENARY ROOM - LEVEL 5

WOMEN IN ENERGY (WiE) PANEL & LUNCH
Key Technical Components for Strategic Planning

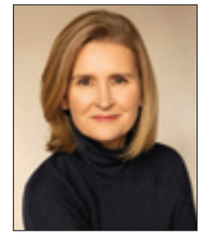
As the energy sector evolves at unprecedented speed, strategic planning has become more critical than ever. Led by a diverse panel of women leaders, the Women in Energy session will explore how technical expertise and its key components not only inform high-level strategy, but also support navigating complex trade-offs, shaping resilient infrastructure, and building inclusive energy futures. From system reliability, digital transformation to decarbonization technologies and data-driven decision-making, this session will highlight how technical insight drives effective strategic planning across the Power and Energy Industry.

WELCOME ADDRESS:
Aimee Intac-Leung, Director Transmission Project Management, Invenergy, and CIGRE Canada Women in Energy and USNC Vice Chair - Intl Partnerships

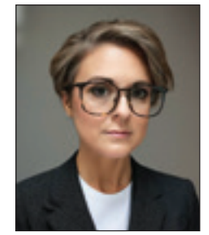
PRESENTED BY:
Angéline Bilodeau, VP Operations & Maintenance, Hydro-Québec (Canada)
Heather Chalmers, President & CEO, GE Vernova (Canada), President, GE Vernova, Hydro (North America)
Christine Newell, Vice President, Corporate Development, Mitsubishi (USA)
RannVeig Loken, Head of Team Protection, Statnett SF, Chair of CIGRE Technical Council (Norway)

MODERATOR:
Lorraine Gray, Vice President, System Operations & Station Services, Hydro One (Canada)


Aimee Intac-Leung


Angéline Bilodeau


Heather Chalmers


Christine Newell


RannVeig Loken


Lorraine Gray

WEDNESDAY, OCTOBER 1 08:00 – 08:30 — PLENARY ROOM - LEVEL 5

KEYNOTE
Building the Future Energy System

The energy system of the future will look very different. While we know where we need to go, we need to consider that new tools and processes are required to navigate new emerging challenges. Fintan Slye, CEO of Great Britain's National Energy System Operator will explore these challenges and identify what is needed to achieve a future energy system that prioritises system resilience and security and decarbonisation, while keeping consumers front of mind.


Udaya Annakkage


Fintan Slye

WELCOME ADDRESS:
Udaya Annakkage, Chair of CIGRE Canada

SPEAKERS:
Fintan Slye, CEO, National Energy System Operator (UK)

WEDNESDAY, OCTOBER 1 08:30 – 10:00 — PLENARY ROOM - LEVEL 5

CEO PANEL
The Power of Alignment

CEOs on uniting grids, markets, and innovation for a resilient energy future.

PRESENTED BY:
Claudine Bouchard, President & CEO, Hydro-Québec (Canada)
Stéphanie Vaillancourt, President, AtkinsRéalis (Canada)
Fintan Slye, CEO, National Energy System Operator (UK)
Bob Myles, CEO, Canadian Utilities Ltd. ATCO Energy Systems (Canada)

MODERATOR:
Indy Butany, Founder Butany Energy & Strategy Inc. (Canada)


Claudine Bouchard


Stéphanie Vaillancourt


Fintan Slye


Bob Myles


Indy Butany

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WEDNESDAY, OCTOBER 1 12:15 – 13:30 — PLENARY ROOM - LEVEL 5

NEXT GENERATION NETWORK (NGN) PANEL & LUNCH
Driving Innovation in the Energy Industry: Lessons from the Past & Opportunities for the Future

CIGRE Canada's Next Generation Network (NGN) aims to support emerging Canadian Power System Professionals by providing opportunities for technical growth, networking and leadership skills for Students and Young Members. Our panel session would be the perfect platform to explore how collaboration across generations can address current industry challenges, promote knowledge transfer, and contribute to a more resilient and sustainable grid!

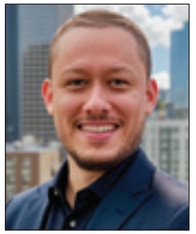
SPONSORED BY: AtkinsRéalis

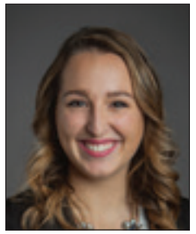
PRESENTED BY:
Frida Ceja-Gomez, Chief Engineer, HVDC and FACTS Solutions, AtkinsRéalis (Canada)
Conor Mulholland, Senior Project Engineer, EirGrid (Ireland) & International NGN Chair, CIGRE
Madjer Santos, Managing Consultant, T&D Engineering and Consulting, RMS Energy (Canada)
Logan Rolles, Assistant Department Manager, Substations, Burns & McDonnell (USA) & NGN Chair, CIGRE USNC
Sabrina Mercer, Head of Strategy, UK & Ireland, Siemens Energy (UK)

MODERATOR: **Aine NurAizza Nuruddin** - Electrical Engineer, Candu Energy [AtkinsRéalis] & NGN Chair, CIGRE Canada

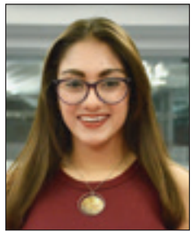

Frida Ceja-Gomez


Conor Mulholland


Madjer Santos


Logan Rolles


Sabrina Mercer


Aine NurAizza Nuruddin

THURSDAY, OCTOBER 2 08:30 – 09:00 PLENARY ROOM - LEVEL 5

KEYNOTE

A Weather Foundation Model for the Power Grid


Jayesh Gupta

Weather foundation models (WFMs) have recently set new benchmarks in global forecast skill, yet their concrete value for the weather-sensitive infrastructure that powers modern society remains largely unexplored. Using specific case-studies, including transmission-line weather stations, wind-farm met masts, and specialized sensors, we show how this approach transforms global models into precision tools for operationally critical forecasts. Most importantly, we attain an F1 score of 0.80 for rime-ice detection—a capability absent from existing operational systems—thereby affording several hours of actionable warning for potentially catastrophic outage events. These results show that WFMs, when post-trained with small amounts of high-fidelity utility data, can serve as a practical foundation for next-generation grid-resilience intelligence.

PRESENTED BY: **Jayesh Gupta**, Founder and CEO of Silurian AI (USA)

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THURSDAY, OCTOBER 2 09:00 – 10:00 PLENARY ROOM - LEVEL 5

CTO PANEL

Artificial Intelligence in Electrical Grid


Christian Bélanger


Hendrik Hamann


Naveen Srivastava


Gerhard Salge


Xing Wang


François Mirallès

This panel will bring together CTOs from the power systems and IT industries to share their expertise and insights on the latest developments and applications of artificial intelligence in electrical grids. Among the topics covered will be how recent breakthroughs in generative AI could lead to a new generation of tools and capabilities in power system planning, operation, and optimization.

PRESENTED BY:
Christian Bélanger, Senior Director, Hydro-Québec Research Institute (Canada)
Hendrik Hamann, Chief Science Officer, IBM Research, Chief Scientist at Brookhaven National Laboratory, Professor at Stony Brook University (USA)
Naveen Srivastava, Director of Operations, Power Grid Corporation of India Limited (India)
Gerhard Salge, Chief Technology Officer, Hitachi Energy (Switzerland)
Xing Wang, Global Leader of Grid Modernization, AWS (USA)

MODERATOR:
François Mirallès, Research Scientist, Hydro-Québec Research Institute (Canada)

THURSDAY, OCTOBER 2 12:15 – 13:30 PLENARY ROOM - LEVEL 5

REGULATORY PANEL

Regulatory Frameworks and Market Integration for Assets under Non-Firm Grid Connection

This panel focuses on the challenges and opportunities associated with integrating renewable and flexible energy assets into markets under non-firm grid connection agreements. With the rapid transition to cleaner energy systems, non-firm connections are becoming a key enabler for renewable energy projects to connect to the grid more quickly. However, they come with regulatory, operational, and market-related challenges that require strategic planning and collaboration among stakeholders.

The panel will bring together industry leaders, regulators, and market operators to explore innovative solutions, policy reforms, and market mechanisms that can maximize the benefits of non-firm grid connections while ensuring reliability, economic efficiency, and fairness in market operations.

WELCOME ADDRESS:
Dr. Rabindra Nath Shaw, Convenor, CIGRE C5.39

PRESENTED BY:
Arne Wohlschlegel, President & Managing Director, Siemens Energy (Canada)
Rainer Korte, Commissioner, Australian Energy Market Commission (Australia)
Samir Chandra Saxena, Chairman, Grid Controller of India Limited (India)
Alex Boyd, President & CEO, PSC Group (USA)

MODERATOR:
Yannick Phulpin, Chair Cigre C5 & Head of Prospective Studies and Development, EDF (France)


Dr. Rabindra Nath Shaw


Arne Wohlschlegel


Rainer Korte


Samir Chandra Saxena


Alex Boyd


Yannick Phulpin

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THURSDAY, OCTOBER 2 17:30 - 18:30 PLENARY ROOM - LEVEL 5

CLOSING SESSION (OPEN TO ALL)

Award of the Best Papers Overall & Prize Draw

SPONSORED BY: SEDIVER

SPEAKERS:
Udaya Annakkage, Chair of CIGRE Canada
Mike Bartel, Vice President, AltaLink (Canada)
Philippe Adam, CIGRE Secretary General (France)
CIGRE Thai National Committee
Pierre Van Dyke, General Chair CIGRE Montreal Symposium (Canada)
Joanne Hu, Technical Co-Chair CIGRE Montreal Symposium (Canada)


Udaya Annakkage


Mike Bartel


Philippe Adam

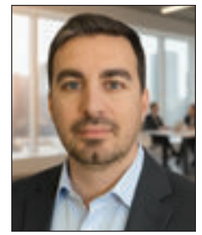

Pierre Van Dyke


Joanne Hu

KEYNOTE

AI in Energy Systems: Powering a Smarter, Sustainable Future

PRESENTED BY:
Vincent Tortajada, Enterprise Account Executive @Google (Canada)


Vincent Tortajada

11 Tutorials DELEGATES ONLY

MONDAY, SEPTEMBER 29

Tutorial A3

08:00–10:30
ROOM 519a

Methods for determining the frequency response characteristics of voltage measurement systems - basics, requirements, performance, mathematical and measurement identification.

This tutorial covers the technology of voltage measurement systems as outlined in the IEC 61869 standards, starting from a detailed overview of conventional and low-power voltage transformers, focusing on their performance at rated and higher frequencies. The tutorial then explores the modern grid requirements and how they influence the performance of secondary equipment in both the frequency and time domains.

Key topics include assessment criteria and accuracy classes for voltage measurement systems, limitations and dependencies affecting frequency response performance, mathematical modelling concepts and measurement methodologies for evaluating test voltage measurement systems, criteria to identify the correct measurement technology to be used depending on grid requirements in terms of disturbance phenomena and applications, applications, and accuracy requirements.

PRESENTED BY: **Erik Sperling**, OMICRON, Convener WG A3.45, Switzerland

On-site calibration and verification of the accuracy of instrument transformers

Instrument transformers accuracy is crucial for voltage, current and energy measurements in high voltage, for both traditional and new applications.

At present, instrument transformers accuracy is in most cases assessed at the Manufacturers' or third-party calibration laboratories; however, in some cases, it can be necessary or desirable, for various reasons, to perform accuracy tests on-site. While the framework (equipment, conditions, procedures, uncertainty evaluation...) relevant to laboratory test is well known, much less experience and references are available with reference to on-site calibration. In this tutorial, an overall introduction of this subject and the first results of the activity of CIGRE WG A3.50 "On-site calibration and verification of the accuracy of instrument transformers" will be presented.

PRESENTED BY:
Paolo Mazza, Ricerca sul Sistema Energetico – RSE S.p.A., Convener WG A3.50, Italy
Gabriella Crotti, INRIM, Director Technology, Member WG A3.50, Italy
Felix Feustel, OMICRON, Product Manager, Member WG A3.50, Austria
Farnoosh Rahmatian, NuGrid Power, CEO, Member WG A3.50, Canada

Tutorial B3

08:00–10:30
ROOM 520e

Guidelines for Fire Risk Management in Substations' from TB 886

Discover global best practices and practical insights in Fire Risk Management in Substations. This tutorial covers everything from risk identification to mitigation strategies across the entire substation lifecycle — including design, construction, operation, and decommissioning.

Gain knowledge from real-world case studies, explore new technologies, and learn how to evaluate fire risks using a Total Cost of Risk (TCoR) approach. Whether you're managing indoor, outdoor, underground, or offshore substassions, this session offers valuable guidance for safer and more resilient infrastructure.

PRESENTED BY: **Shinki Noguchi**, Chubu Electric Power Grid Co., Inc, Manager, Japan
Akira Okada, Hitachi Energy Japan LTD., Quality and Continuous Improvement Advisor, Japan
John Randolph, LS Power, Principal Engineer, USA

Tutorial B4

08:00–10:30
ROOM 518bc

Condition Health Monitoring and predictive maintenance of HVDC Converter Stations

The tutorial will introduce the WG B4.89's technical brochure on the review of condition monitoring and diagnostic methods for HVDC VSC substations to enhance maintenance strategies towards predictive maintenance. It focuses on VSC valves - IGBT modules, capacitors, and cooling systems.

The tutorial will present the state-of-the-art of online monitoring techniques that can detect early degradation via damage-sensitive electrical parameters (DSEPs), It will also cover diagnostic to assign a health index based on current analysis and signal processing, and prognosis to estimate the remaining useful life using physics-based, machine learning, or data-driven approaches.

The session will compare predictive maintenance with traditional run-to-failure and time-based preventive strategies outlining the advantages and give the disadvantages of each in terms of inspections, downtime, cost, complexity, return on investment, and required expertise.

The tutorial will conclude with a Q&A to discuss how condition monitoring of VSC valves can be integrated into practical business models, transitioning to predictive maintenance aligned with stakeholders O&M strategies.

PRESENTED BY: **Nadine Chapalain**, Convener, Research Engineer, Mitsubishi Electric, France
Rick Valiquette, Senior associate HVDC and FACTS, Burns & McDonnell, Canada
Guillaume Gallet, Offshore Energy – Chantiers de l'Atlantique, Senior HVAC & HVDC tender manager, France
Huai Wang, Professor, Aalborg University (AAU), Denmark
Guy Clerc, Professor, Ampere University , detached at SuperGrid Institute, France

Tutorial B3

11:00–12:00
ROOM 520e

BESS - Battery Energy Storage Solutions (TB 869)

A Design Guideline for Substations Connecting BESS — including key drivers for BESS, technical requirements, substation design, installation and commissioning, maintenance, and recommendations. This tutorial is suitable for those starting the design of substations for the implementation of BESS.

PRESENTED BY: **Mr. Suriya Prungkhwunmuang**, Chief, Quality Control Department, Transmission System Planning and Project Division, EGAT, Thailand
Mr. Napat Chatrung, Engineer level 7, Advanced Technology Equipment and Technical Section Substation Electrical Equipment Engineering Department, Transmission System Engineering Division, EGAT, Thailand

Panels, Keynote Presentations, Tutorials, Workshops, Paper Presentations are open to Registered Delegates only.
Program last updated on September 08, 2025. Subject to change at any time. **Latest updates available on the CIGRE 2025 APP**.

Tutorial B2

12:30–14:00
ROOM 520ad

Assessment of the methodologies to analyze wind induced overhead line conductors motion: applications and limitations

The design of overhead transmission lines with respect to wind-induced vibrations has traditionally relied on field experience and simplified approaches. Over time, mathematical models have been developed to predict the behaviour of both single and bundled conductors when subjected to various wind-induced phenomena, including aeolian vibrations, subspan oscillations, and ice galloping. In the Tutorial, after a description of the wind-induced phenomena, the methods available for simulating aeolian vibrations, subspan oscillations, and ice galloping are presented and analysed. Through comparisons of numerical predictions with available experimental results, the limitations and reliability of the numerical methods are presented and discussed.

PRESENTED BY: **Giuseppe Bucca**, Associate Professor, Politecnico di Milano, Italy

Tutorial A2

14:00–16:00
ROOM 520f

Guide on Transformer Maintenance

Technical Brochure TB445 "Guide for Transformer Maintenance" published in 2011 is the most downloaded CIGRE brochure of all times. Considering the sustained interest of the CIGRE community for this topic and the evolution of the maintenance practices, materials, design and manufacturing, an update of the brochure has been released in 2025 (TB 962) in order to assure that CIGRE delivers the most complete and up-to-date information to its members. This tutorial will go over the main features of the newly released edition, highlighting critical upgrades, additions and enhancements.

PRESENTED BY: **Claude Rajotte**, Engineer, Hydro-Québec, Canada

Tutorial C1

16:30–18:00
ROOM 519b

The potential roles of Energy Storage in Electric Power Systems

The tutorial provides an overview of the various types of energy storage as they continue to evolve, including how different forms of energy storage can be applied, the issues they address, and the problems they encounter. It also presents examples of energy storage experiences, the main factors in selecting energy storage, and a glimpse into future developments

PRESENTED BY: **P. Jeffrey Palermo**, (USA) Convener of CIGRE WG C1.51

TUESDAY, SEPTEMBER 30

Tutorial B4

10:00–12:00
ROOM 518bc

Protocol for reporting operational performance of HVDC Systems and FACTS

CIGRE B4 Advisory Group AG-04 (initially SC14 WG-04) was formed specifically to assemble and publish data on the reliability and operational experience of HVDC systems in service around the world. The Advisory Group developed definitions for the reliability terms and parameters and prepared a protocol for collecting and compiling the data (most recent version is Technical Brochure 956). The first data were collected in 1968, covering 4 HVDC systems utilizing mercury arc valves. The HVDC survey data is published every 2 years at the CIGRE Session in a paper titled, "Survey of the Reliability of HVDC Systems throughout World". AG-04 has also published a protocol for FACTS reliability (Technical Brochure 717) and started collecting data in 2017. This data will be published every 2 years at the CIGRE International Symposia. The guidelines for reporting performance for HVDC and FACTS as outlined in the protocols will be presented in this tutorial.

PRESENTED BY: **Joshua Burroughs**, Dynamic Device Lead, Vermont Electric Power Company, USA
Hiranya Suriyaarachchi, Principal Engineer, Transgrid Solution (Part of Ramboll), Canada

WEDNESDAY, OCTOBER 1

Tutorial EHV & UHV

16:30–18:00
ROOM 522a

Effects of DC Bias on Power Transformers
Influence of Geomagnetically Induced Currents on Grid Operation

There has been growing concern in the industry regarding the impact of Geomagnetically Induced Currents (GIC), or DC-quasi currents, which have caused, and may continue to cause, overheating of large numbers of power transformers in certain regions of the world, potentially leading to large-scale, long-duration system blackouts. Similarly, other sources of DC bias, depending on the associated parasitic DC levels, may also affect transformers. These include applications involving power electronic components, HVDC systems, and DC transmission or traction systems.

This tutorial will address the effects of DC bias (including GIC) on power transformers and reactors and to explore methods for assessing the transformers' ability to withstand these impacts.

PRESENTED BY: **Patrick Picher**, Researcher and project manager, Hydro-Québec's Research Institute (IREQ), Canada
Afshin Rezaei-Zare, Associate Professor, York University, Canada
Stefan Tenbohlen, Head of Institute of Power Transmission and High Voltage Technology, University of Stuttgart, Germany

THURSDAY, OCTOBER 2

Tutorial B4

14:00–15:30
ROOM 518bc

Protocol for reporting operational performance of HVDC Systems and FACTS

A tutorial centred around progress to date of WG B4.90 "Operation and Maintenance of HVDC and FACTS Facilities", covering topics including overall operation requirements for HVDC systems, O&M of major items of HVDC equipment, plant and systems, preparation and readiness for O&M operation (for new HVDC facilities) and O&M documentation. The tutorial will also present preliminary outcomes from a recent questionnaire issued to owners and operators of HVDC facilities.

PRESENTED BY: **Les Brand**, Amplitude Power, Managing Director, Australia
Geethma Dissanayake, Transpower, Senior HVDC & Power Electronics Simulations Engineer, New Zealand

Tutorial A1

16:00–17:30
ROOM 520f

The blackout of the Iberian Peninsula on April 28, 2025

At 12:33 on April 28, 2025, the electric power system of the Iberian Peninsula collapsed, leading to a full blackout. Sixty million people lost the electricity supply. The Spanish Government, the Spanish Transmission System Operator, and the Association of Electric Utilities have issued reports. The investigation of the European Network of Transmission Operators for Electricity is underway. The talk will summarize the main events. It will also bring up the points of controversy.

PRESENTED BY: **Miguel Cordoba**, Comillas University, Spain

7 Workshops DELEGATES ONLY

Access upon additional registration

MONDAY, SEPTEMBER 29

Workshop C5

08:00–09:30
ROOM 521abc

Retail Electricity Markets and Competition

The goal of this workshop is to present the preliminary findings of our working group on retail electricity markets and retail competition, with a focus on market design and the key elements that enable new services and solutions for consumers. In the workshop, we will discuss a variety of regional perspectives.

In North American jurisdictions, the diversity of approaches is itself a central feature. While regions such as Texas (ERCOT) embrace highly competitive frameworks, others like California (CAISO) are advancing with hybrid models that combine retail choice with strong regulatory oversight and community aggregation.

In Europe, retail competition faces the dual challenge of deepening liberalization while ensuring consumer protection in the face of price volatility and geopolitical shocks. The energy crisis of 2021–2022 exposed the limits of current models, pushing regulators to rethink hedging obligations, default supplier arrangements, and mechanisms to safeguard vulnerable consumers, all while maintaining incentives for innovation and new entrants.

In Australia, the key challenge is how to accommodate a rapidly growing penetration of distributed energy resources (DER), particularly rooftop solar.

PRESENTED BY: **Alexandre Viana**, CEO, Envol Global Energy Consulting, Brazil

Workshop by Siemens Energy

11:00–12:30
ROOM 518a

Decarbonizing District Heating: Canada's first Clean Air Installation and Advancements in SF6-Free Switching Technology

We will present the latest developments with the implementation of SF6- Free HV Gas Insulated Substation (GIS) technology using Clean Air (the combination of 80% N2 and 20% O2) as insulation gas with a Global Warming Potential of 0, and vacuum interrupting technology. We will as well share Creative Energy's Decarbonization Project in Vancouver, and their decision-making criterion to enable the usage of 145 kV Clean Air GIS within the project.

PRESENTED BY: **Dr. Mark Kuschel**, Siemens Energy
Eduardo Gomez Hennig, Siemens Energy
Ben Ellison, Creative Energy

Workshop by Hitachi Energy

11:00–12:30
ROOM 520c

Decarbonizing District Heating: Canada's first Clean Air Installation and Advancements in SF6-Free Switching Technology

Dr. Jürgen Häfner will give a compelling tutorial for the future of power transmission, emphasizing the transformative role of High-Voltage Direct Current (HVDC) technology in enabling resilient, flexible, and sustainable energy systems.

Steve Aubert will provide insight as to the use of Power Converters in the context of Hydro Pump storage facilities using synchronous machines.

Key Themes:

- **HVDC as the Backbone of Future Grids**
- **Technological Evolution**
- **HVDC Applications**
  - Long-distance bulk power transmission (e.g., >500 km overhead or >30 km underground/submarine).
  - Submarine cables for offshore wind farms and intercontinental links.
  - Urban power delivery where right-of-way is constrained.
  - Interconnection of asynchronous grids, improving grid reliability and flexibility.
  - Black start capability and fault current limitation
  - Weak grid connections
  - Multi-terminal networks
  - Emerging Use Cases
- **Future Outlook**

PRESENTED BY: **Dr. Jürgen Häfner**, Global Technology Manager for HVDC at Hitachi Energ, Sweden
Steve Aubert, Sales Manager from our Global Competence Center for Power Conversion, Switzerland

CIGRE 2025 International Symposium Palais des congrès de Montréal, Canada • September 29 to October 3, 2025

MONDAY, SEPTEMBER 29

Workshop C4

14:00–18:00
ROOM 524ab

Role of wide-area EMT simulations in IBR-dominated power systems: needs and solutions

The global effort to decarbonize and expand electrical power systems involves significantly increasing the penetration of renewable plants (such as wind and solar) and supporting technology (e.g. battery energy storage systems). Collectively, these are known as Inverter Based Resources (IBRs) due to their connection to the system via power electronic converters. At the same time, the percentage of conventional synchronous generation with rotational inertia on power systems is reducing. This increase of IBRs and reduction of inertia and system strength creates challenges in terms of power system stability, which require the application of techniques such as wide-area electromagnetic (EMT) simulation to ensure the stability and reliability of modern power systems.

Wide-area EMT studies have become a necessity in many scenarios, and great advancements have been recently made to integrate EMT simulation into planning and operational studies in some jurisdictions. However, the widespread adoption of this type of simulation is hindered by challenges such as availability of high-fidelity models, interoperability, large-scale power system model development and management, simulation speed, and specific skill requirements.

This workshop will bring together transmission system operators and software vendors to discuss the role of wide-area EMT simulations in IBR-dominated power systems, share needs and experiences and explore the latest advancements in EMT simulation capabilities.

PRESENTED BY: **David Jacobson**, Section Head – Interconnection Planning, Grid Infrastructure Planning Department, Manitoba Hydro, Canada
Marta Val Escudero, Advanced Stability Tools and Models Manager Future Operations, EirGrid, Ireland
Benoît Delourme, Director Energy system design and planning, Engineer - EMT Studies (and Julie Lacroix), Canada
Yannick Vernay, Head of EMT Studies & Power Electronics Team RTE, France
Dr. Yousef Pipelzadeh, Director of European Operations, Manitoba Hydro International Ltd., London, United Kingdom
Jean Bélanger, CEO and CTO, OPAL-RT, Montreal, Quebec, Canada
Flavio Fernandez, Managing Director of DIgSILENT GmbH, Germany
Jean Mahseredjian, President, PGSTech (EMTP®), Professor, Polytechnique Montreal, Canada
Kumara Mudunkotuwa, Senior Engineer, Electranix Corporation, Winnipeg, Manitoba, Canada
Paul Forsyth, VP - Marketing & Sales at RTDS Technologies Inc., Winnipeg, Canada

WEDNESDAY, OCTOBER 1

Workshop by Siemens

10:30–12:15
ROOM 520ad

Smarter, Stronger Grids: Tackling Capacity & Reliability with Siemens Innovation

Join the Siemens team for a deep dive into the innovations available to support smarter and stronger grids. Siemens technologies such as Blue GIS, Gridscale X, and our advanced grid-scale PV inverters are designed to support managing grid capacity, integrating renewable energy, and modernizing infrastructure. This comprehensive approach ultimately results in greater customer satisfaction, significant cost efficiencies, and a substantial contribution to environmental sustainability.

PRESENTED BY: **Mark Childerhose**, Director of Product Lifecycle Management, Electrification & Automation, Siemens
Rudy Wodrich, Global Head – Green Technology, Electrification & Automation, Siemens
Yang Feng, Gridscale X Product Management, Siemens

THURSDAY, OCTOBER 2

Workshop A3 & B5

10:30–12:15
ROOM 519a

Digitalization of Switchgear: Implementation experience and integration with the Protection World

The energy sector is undergoing a profound transformation, driven by decarbonization, decentralization, and digitalization. The workshop aims to provide an overview of digitalization challenges relevant to switchgear and T&D equipment, with particular reference to Utilities' views and plans, state of standardisation, advancements in interfacing with protection and control systems and components readiness, benefits and challenges of wider instrument transformer bandwidth and future integration between protection and monitoring.

PRESENTED BY: **Frank Richter**, 50Hertz, Germany **(Moderator)**
René Doche, Hydro-Québec, Canada
Jimeno Fonseca, Department Head, Axpo, Switzerland
Michel Gauvin, Hydro-Québec, Canada
Volker Leitloff, SC B5 Chair, Rte, France
Farnoosh Rahmatian, NuGrid Power, CEO, Canada
François Trichon, Schneider Electric, Standardization leader, France
Nenad Uzelac, G&W Electric, Sr Dir, Innovation, USA

Workshop B2

13:30–17:00
PLENARY ROOM

Adapting Design Practices: Evolving Requirements for Overhead Transmission Line Structures (2000-2025)

This workshop aims to review the major changes in design requirements for overhead transmission line structures over the past 25 years. Design practices have evolved to address multiple challenges, including aging of the infrastructure, climate change, public acceptance, and worker safety. Experts from four countries will present their national perspectives, followed by a panel discussion to further share past experiences and exchange innovative solutions that have been developed to enhance the safety and reliability of overhead power transmission structures.

PRESENTED BY: **John McCormack**, Australia
Bing Lin, Australia
Joao Batista Da Silva, Brazil
Pierre-Jean Rioux, Canada
Leon Kempner, USA
Sébastien Langlois, Canada **(Moderator)**

TECHNICAL SESSIONS - MONDAY, SEPTEMBER 29

8:00 - 10:30

SESSION 1

Room 520ad

B2-1 TRANSMISSION TOWER INNOVATIONS & ENGINEERING CHALLENGES

Session Chairs: Joao da Silva, Alexis L. Desrochers

Optimization of Cross-rope due to servitude restrictions by Suren Natesan[1], Jose Diez Serrano[2]; [1]NTCSA, South Africa; [2]enginering consultant;

Increasing the strength of steel tower materials by attaching Carbon Fiber Reinforced Plastics(C-FRPs) by Yohei Tomono[1], Kohei Ishikawa[1], Yuta Yamamoto[1], Ryo Yuzawa[1], Takeshi Nakamura[2], Tomohiro Ishida[2]; [1]Chubu Electric Power Grid Co., Inc., Japan; [2]TOMOE Corporation, Japan;

Research On Intelligent Transmission Line Tower Lifting And Disassembling Construction Equipment Based On Multi-Modal Data Fusion by Xiangbiao LENG[1], Jing LENG[2], Haixiang YU[1], Zijie ZHENG[2], Li QIN[3], Yuge XU[2], Wenxiao ZHOU[3], Linjun ZHENG[3], Sihan CHE[4], Jiang BIAN[1]; [1]China Southern Power Grid Energy Development Research Institute Co., Ltd.; [2]South China University of Technology; [3]Guangdong Power Grid Energy Development Co., Ltd.; [4]Northeast Electric Power University;

Design of Outrigger Pads for Safe Operation of Mobile Plant used for Overhead Line Maintenance by Jodie Mann[1], Nisha Ravindradevan[1], Dongu Li[1], John McCormack[1], Peter Mitchell[2]; [1]Transgrid, Australia; [2]Aurecon;

An Overview of the Evolution of Overhead Power Line Crossing Systems in South Africa by Shaina Grant, Bertie Jacobs; Eskom NTCSA (National Transmission Company South Africa),

Parallel Giants: The Twin Steel poles in Heart of National Capital Region by Shrikant G. GAJBHE, Nitesh Kumar SINHA, Manoj Kumar Singh, Abhay Kumar, Vamsi Rama Mohan BURRA; Power Grid Corporation of India Limited, India;

Evaluation of Stresses in Critical Members of Transmission Line Towers During Prototype Testing Using Wired and Wireless Strain Gauges by INDRA SINGH ROURIYA, Satish Kumar, Nitesh Kumar SINHA, Raj Kumar Singh, Abhay Kumar, Vamsi Rama Mohan BURRA; POWER GRID CORPORATION OF INDIA LTD, India;

Novel Aluminium Connections: Structural Behavior and Application in Transmission Towers by Sima Soltaniazar, Marc Demers, Alex Loignon, Ali Davaran, Charles-Philippe Lamarche, Sébastien Langlois, Alain Desrochers; Université de Sherbrooke, Canada;

Innovative Steel tubular Pole-Lifting Techniques: Addressing Clearance Violations in Transmission Lines by Tirthak Shah, Benjamin Kebernik, Nathan Stahl; Ampjack Industries Ltd, Canada;

Design Philosophy on Uprating/Upgrading of Ground wires on Transmission Lines by Chandresh Juggernath, Gino Pillay, Ameeth Nathoo; National Transmission Company South Africa, South Africa;

8:00 - 10:30

SESSION 2

Room 520b

C6-1 MICROGRID APPLICATIONS IN ACTIVE DISTRIBUTION SYSTEMS

Session Chair: Michael Ross

Real-time Simulation Study of Thermal-electrical Interactions in a CHP-based Microgrid by Jalal Dadkhah, Yizhong Hu, Yi Zhang; RTDS Technologies Inc., Canada;

Short-Circuit Fault Detection and Protection Coordination in Inverter-Based Microgrids by Satoru AKAGI[1], Kazuhiro YOSHIYAMA[1], Shinya MORITA[1], Rei ITO[1], Ryohei KOIZUMI[2], Yoshinobu UEDA[3]; [1]TEPCO Holdings, Inc.; [2]TEPCO Power Grid, Inc.; [3]MEIDENSHA Corp.;

Evaluation of distribution system protection for the "Serra da Saudade Microgrid" project by Henrique Parreiras Couto, Washington Rodrigues da Silva, Danilo Derick Silva Alves, Franz de Cassias Strobel, Fernando Henrique Dias Martins, William Alves de Souza, Marney Tadeu Antunes; Cemig Distribuição, Brazil;

Isolated Microgrid Asset Sizing by Christopher Loo, Mark Mielke; ATCO Electric, Canada;

OasisTwin: A Digital Twin Platform for Microgrid Resilient Operation by Minoo Shariat-Zadeh[1,2], Moein Manbachi[2], Mehrdad Moallem[1]; [1]Simon Fraser University, Canada; [2]British Columbia Institute of Technology, Canada;

Study on Microgrid Services for Colombian Power Grids: Potential and Advances by YEFERSON LOPEZ ALZATE, EDUARDO GOMEZ LUNA; Universidad del Valle, Colombia;

Innovative Approaches to DER Integration in Brazilian Scenarium : Business Models and Microgrid Implementation by Thais Marzalek Blasi[1], Raphael Marzalek Blasi[2], Alexandre Rasi Aoki[2], Ciceli Martins Luiz[3], Leonardo H. de M Leite[4]; [1]OPAL-RT; [2]Federal University of Paraná; [3]CEMIG; [4]FITec;

Autonomous Microgrid Resilience Enhancement Using Coordinated Preemptive Load Shedding and Battery Control by Saeedreza Jadidi, Xun Gong, Bo Cao, Reza Iravani, Minghui Xu, Ziming Chen; Huawei Montreal Research Centre, Canada;

Enhancing live PV Production Estimates in Isolated Microgrids: A Sample Selection and Estimation Approach by Stefanos Kokkinelis, Charalampos Pappas, Despina Koukoula; Hellenic Electricity Distribution Network Operator S.A., Greece;

Using Controlled Environment Agriculture (CEA) as a Dispatchable Load for Microgrids at a Community Scale by Lichen Wu, Liping Wang; University of Wyoming, United States of America;

Resilient Microgrids by using Grid Forming Inverters with Rooftop Solar PV and Battery Energy Storage Systems (BESS) by Kiran Singh, Pankaj SHARMA, Y K DIXIT, Naveen SRIVASTAVA; POWERGRID, India;

11:00 - 12:30

SESSION 3

Room 520ad

B2-2 CONDUCTOR DYNAMICS & ENVIRONMENTAL IMPACT OF TOWERS

Session Chairs: Marta Landeira, Jean-Philippe Paradis

Comparison of the environmental impacts of aluminum and steel transmission towers in Quebec. by Rozensky Joseph, Ben Amor, Sébastien Langlois; Université de Sherbrooke, Canada;

An updated equivalent oscillator model for VIV reproduction on transmission line conductors by Federico Zanelli, Alessandro Galimberti, Giuseppe Bucca, Giorgio Diana; Politecnico di Milano, Italy;

Laboratory Validation and Testing of a Transmission Line Monitoring System for Vibration Phenomena Detection and Analysis by Pedro Henrique Rocha[1], Elhacene Matene[1], Boris Adum[2], Jean-Philippe Paradis[1]; [1]Preformed Line Products, Canada; [2]Statnett SF, Norway;

New technology using a smartphone to measure and monitor guy wires tension in transmission line by Nadjib Bouikni; Hydro-Québec, Canada;

Damaging of conductors on stringing blocks by Josee Paradis, Simon Prud'homme, Pierre Van Dyke; Hydro-Québec, Canada;

Numerical and experimental study of the relationship between the inverted bending amplitude and the bending amplitude of transmission line conductors by Pedro Felippe Duarte de Oliveira[1], Sébastien Langlois[1], Pierre Van Dyke[2]; [1]University of Sherbrooke, Canada; [2]Hydro Québec;

11:00 - 12:30

SESSION 4

Room 520b

C6-2 INNOVATIVE USES OF BATTERY STORAGE TO MANAGE DISTRIBUTION SYSTEMS

Session Chair: Andrew MacMillan

EV Managed Charging Strategies for Transmission & Distribution Planning by Abdelrahman Ayad[1], François Bouffard[1], Graham Turk[2], Pablo Duenas-Martinez[2]; [1]McGill University, Montrea, QC, Canada; [2]MIT, Cambridge, MA, USA;

A Novel Deep-learning Model for Optimal Integrating of BESSs in Power Grids by HamidReza Mansouri, Mohammad Majid Jalali; Niroutrans Co., Iran, Islamic Republic of;

Optimal sizing of battery energy storage in a grid-connected PV system: A comparative study of three optimisation algorithms by Zakaria Adam SOULEYMANE[1], Augustin MPANDA MABWE[1], Julien JEAN-VICTOR[2], Jérôme FORTIN[1], Prescillia DUPONT[1], Arnaud DUJANY[2]; [1]UniLaSalle Amiens; [2]UniLaSalle Beauvais;

Electric Thermal Storage as a Tool for Peak Shifting by Patrick Thomas Giles, Michael Ross; Yukon University, Canada;

Deep Reinforcement Learning Agent for Tuning Controller Parameters of an Energy Storage System Using Real-time Simulations by Yasas Sanju Kandemulla Arachchige[1], Athula Rajapakse[1], Bagen Bagen[2]; [1]University of Manitoba, Canada; [2]Manitoba Hydro, Canada;

Implementation, Field Operation and Standardization Consideration for Use of Mobile Battery Energy Storage in Temporary Power Applications by Farid Katiraei[1], Naera Haghnazarian[2], Ayman Lpizra[2], Jennifer Hebsch[2], Philip Johnson[3], Damir Novosel[4]; [1]Innoversa, Canada; [2]Eversource Energy, USA; [3]Sunbelt Rental, USA; [4]Quanta Technology;

12:30 - 14:00

NGN KNOWLEDGE SHARING SESSION 1

Room 519b

Mind the Gap: Lessons from Experienced Professionals to the Next Generation

14:00 - 16:00

SESSION 5

Room 520c

A1-1 PARTIAL DISCHARGE, AI & ML APPLICATIONS

Session Chairs: Howard Sedding, Peter Albert Wiehe

Pulse Shape Analysis and Advanced Techniques for Partial Discharge Measurement in Rotating Machines by André Tomaz de Carvalho, Daniel Leandro Argolo, Caio Fleming Cunha, Hélio de Paiva Amorim; CEPEL, Brazil;

Locate Hydrogenerator Stator Failure by Partial Discharge Monitoring, Dielectric Test and Corona Inspection by Fernando Brasil, Julio Nascimento, Paulo Vilhena; Eletrobras Eletronorte, Brazil;

Evaluation of the high-frequency electrical behavior of stator windings of 18 kV by measuring partial discharges and complement analysis using the EMTP/ATP by Hélio Amorim, Mayara Cagido, Rogério Azevedo, Daniel Argôlo; Cepel, Brazil;

Evaluation of the Discharges Criticality in the Stator Winding End Corona Protection Region by Paulo Vilhena[1], Fernando Brasil[1], Johnny Rocha[2]; [1]Eletrobras Eletronorte, Brazil; [2]Trassínio Consultoria Ltda, Brazil;

Machine Learning Techniques for Identifying Partial Discharge Sources from Phase-Resolved Partial Discharge Patterns by Melanie Levesque, Ryad Zemouri; Hydro-Quebec, Canada;

Applicability of AI Tools to Analyze Phase-Resolved Partial Discharge from Motor and Generator Stator Windings by Greg C. Stone[1], Mladen Sasic[2]; [1]Stone Dielectrics, Canada; [2]Iris Power L.P., Canada;

AI-Driven Fault Detection in Hydroelectric Generators: Integrating Variational Autoencoders with Stray Flux Analysis by Helene Bechara[1], Ryad Zemouri[2], Arezki Merkhouf[2], Antoine Tahan[1], Kamal Al-Haddad[1]; [1]Ecole de technologie supérieure, Canada; [2]Hydro Québec Research Institute (IREQ);

Software Design of Turbine Generator Shaft Earthing-Brush Fault Types Diagnosis System Based on Deep Learning by Katudi Oupa Mailula[1], Mawande Mbotyini[2]; [1]Eskom RT&D, South Africa; [2]Eskom NTCSA, South Africa;

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All times are in EST - Eastern Standard Time (Montreal - Canada)

TECHNICAL SESSIONS - MONDAY, SEPTEMBER 29

14:00 - 16:00

SESSION 6

Room 519a

A3-1 RELIABILITY

Session Chair: Hiroki Ito

Use of Gasket Eliminator to prevent flange corrosion and prevent gas leakage by Matthew Iles, Keith Williams; National Grid, United Kingdom;

Multi-modal Machine Learning Prediction of Fleetwide Switchgear SF6 Escape from Historical Maintenance Records, Online Monitors and Domain Expertise by Ting LIU[1], Fiona IRWIN[2], Luis DE LA BARBA SUAREZ[3], Allan Holton[3], Dan JONES[4], Rob TERRET-HENSMAN[4], Gordon WILSON[4], Annalisa RICCARDI[1], Blair BROWN[1], Stephen DJ MCARTHUR[1], Brian G STEWART[1], Bruce STEPHEN[1]; [1]University of Strathclyde, UK; [2]SSEN, UK; [3]ScottishPower, UK; [4]NGET, UK;

Statistical Method for Gas Leak Detection for SF6 Circuit Breaker Based Only on Gas Temperature and Absolute Pressure by Ryszard Pater, Nathan Lefebvre, Doche René, Michel Gauvin, Antoine Mailhot, Éric Ouellet; Hydro-Québec, Canada;

Implication of maintenance practices on the reliability on equipment such as CB and GIS by Ryota Kuriyama[1], Frank Richter[2], Matthew Iles[3], Syuichi Tamura[4], Wayne Pepper[5], Robert Le Roux[6], Sorawit Chiarapisitphong[7], Hiroki Ito[1]; [1]Mitsubishi Electric Corporation, Japan; [2]50Hertz Transmission GmbH, Germany; [3]National Grid, United Kingdom; [4]TEPCO Power Grid, Japan; [5]Ausgrid, Australia; [6]ESB, Ireland; [7]EGAT, Thailand;

CIGRE Fourth Reliability Survey on GIS and CB by Hiroki Ito[1], Wayne Pepper[2], Frank Richter[3], Robert le Roux[4], Matthew Illes[5], Anongpun Man-Im[6], Mohammad Raza[7], Giancarlo Guenzi[8]; [1]Mitsubishi Electric, Japan; [2]Ausgrid, Australia; [3]50 Hertz, Germany; [4]ESB, Ireland; [5]National Grid, United Kingdom; [6]EGAT, Thailand; [7]Hitachi Energy, Switzerland; [8]Consul, Italy;

Implementation of Optical Technology for Fault Detection in High Voltage Mixed Lines by Iker García, Alejandro Relloso, Iñigo Extremiana; ELECTROTECNICA ARTECHE HNOS., S.L., Spain;

Factors affecting reliability of Low Voltage Switchgears by Sukant Bhattacharya; DNV, United Arab Emirates;

14:00 - 16:00

SESSION 7

Room 520ad

B2-3 ADVANCES IN INSULATOR DESIGN & DIAGNOSTICS FOR HIGH VOLTAGE TRANSMISSION - PART 1

Session Chair: Michele De Nigris

High Voltage Suspension Insulator String Designs for Extreme Weather Events by Alexandre Matte[1], Charles Montgomery[2], Tyler Petersen[2]; [1]Sediver; [2]Commonwealth Edison (ComEd);

Understanding the Performance of Silicon Rubber and Determining Additional Criteria in Evaluating Polymeric Insulators for Malaysia's Climate. by Nadiah Salwi Hudi[1], Azwadi Mohamad[2], Najmidin Yaakob[3], Nur Azrini Ramlee[3]; [1]Tenaga Nasional Berhad (Malaysia), Malaysia; [2]TNB Research, Malaysia; [3]Universiti Teknologi Mara (UITM, Malaysia);

Modelling the Surface Contamination of High-Voltage Overhead Line Insulators over Italy by michele de nigris, Alessandra Balzarini, Nicola Luciano, Domenico Toscano, Guido Pirovano; RSE SpA, Italy;

Enhancing Reliability of Power Transmission through Thermal Scanning of CLR insulator by ALOK KUMAR, PANKAJ KUMAR RAI, MRITYUNJAYA CHOUBEY, YUGESH KUMAR DIXIT; Power Grid Corporation of India Ltd., India;

Comparison of the Dielectric behaviour of artificially polluted Insulators using different Test Methods by Franziska Gebhardt[1], Tim Felix Reinhard[2], Stefan Kühnel[3], Stefan Kornhuber[3], Peter Werle[4]; [1]50 Hertz Transmission GmbH, Germany; [2]TU Berlin, Germany; [3]Zittau/Görlitz University of Applied Sciences, Germany; [4]Leibniz University Hannover, Germany;

SunZia ±525 kV HVDC Transmission Line Project – Transmission Assembly Testing for HVDC by Jeff Butler; Hubbell, United States of America;

Key factors for reliable results in E-field simulations of OHTL insulators by Peter Sidenvall[1], Fabian Lehretz[2]; [1]Independent Insulation Group, Sweden; [2]Tennet, Germany;

Advantages of factory coated insulators before installation for overhead lines and substations by Lucia Graziosi, Pasquale Graziosi, Pierfrancesco Lanza, Mario Morella; ekd project s.r.l., Italy;

14:00 - 16:00

SESSION 8

Room 520e

B3-1 AI & ROBOTIC APPLICATIONS FOR SUBSTATIONS

Session Chairs: John Randolph, Crina-Miana Costan

Basic Verification of Substation Patrol by Drone by Yuki YATABE[1], Tetsuya IKEDA[1], Yusuke TAKENAKA[1], Shinya AICHI[1], Takaya MASUDA[2], Takuya ASAHARA[2]; [1]CHUBU ELECTRIC POWER GRID Co., Inc.; [2]SENSYN ROBOTICS, Inc.;

Knowledge management using AI: a case study of substation lifecycle management for development of young and newly hired engineers by Shinki Noguchi[1], Akira Okada[2]; [1]Chubu Electric Power Grid Co., Inc.; [2]Hitachi energy;

Automated Inspection Robot System for Large EHV Air-insulated Substations by Julien Beaudry, Philippe Dandurand, Patrick Mongenot, Camille Hébert, Claude Rajotte, Germain Bizier; Hydro-Québec, Canada;

Immersive virtual reality training for enhanced safety and operational preparedness in the distribution grid by Pascal Bolz, Dominic Fehling, Markus Zdrallek, Tobias Meisen; University of Wuppertal, Germany;

Digitalization of Electric Power Systems using sustainable, Smart Substations with Cloud Connectivity by Thomas Duerr[1], Mark Childerhose[2], Bernd Schuepferling[1]; [1]Siemens AG, Germany; [2]Siemens Canada Limited, Canada;

Using GeoBIM, IoT and IA for Predictive Diagnose on High-Voltage Substations by Ana Cristina Marotti[1], Filipe Salles[1], Gerson Fávio Lima[2], Fernanda Machado[3]; [1]Eletrobras, Brazil; [2]CG Works, Brazil; [3]Autodesk, Brazil;

Wireless sensors and AI applications for switchyard equipment condition monitoring and real time health assessment by Ravi Sushant Chaudhary, Joseph Jose, Mahendra kumar kaloria, Devaprasad Paul, Ravindra Nath Gupta; POWERGRID, India;

AI-driven Efficiency: Transforming APM Systems through Optimization of OT and IT by Thierry JUNG, Austin Byrne, Sihui Chen; GE VERNOVA;

14:00 - 16:00

SESSION 9

Room 518bc

B4-1 HVDC/FACTS - INTERACTION & COUPLING

Session Chair: Sebastien Dennetiere

The experience of the Sub-Synchronous Torsional Interaction study based on the Real Time Simulator for the South Korea Power System by hyunkeun Ku, gumin Kwon, injoo Jeong, sehwan Joo, hyeonggeun Kim, jaekoon Kim, chulsoo Seo, jeonghoon Shin; KEPCO, Korea, Republic of (South Korea);

Overvoltage Considerations of coupled parallel DC transmission lines in terms of earthing and work safety by Volker Vahrenholt[1], Felix Hamann[2], Chandana Karawita[3], Raveen Gunarath[3]; [1]50Hertz Transmission GmbH, Germany; [2]AFRY Deutschland GmbH; [3]TransGrid Solutions Inc.;

Power Oscillation Damping using Grid-Forming HVDC Converters by Saman Dadjo Tavakoli, Shahab Karrari, Ngoc Tuan Trinh, André Schön, Robert Renner; Siemens Energy, Germany;

Influence of HVDC Transmission on Parallel Underground Pipeline Infrastructure by Nicole Denboer[1], Chandana Karawita[1], Roshani Kaluthanthrige[1], Volker Vahrenholt[2]; [1]TransGrid Solutions Inc., Canada; [2]50Hertz Transmission GmbH, Germany;

An Invasive Harmonic Impedance Measurement Approach for VSC-HVDC Systems by Shrinath Kannan[1], Omar Fadhel Jasim[2], Ceren Yurt[1], Gearoid Oheidhin[2]; [1]GE Vernova, Germany; [2]GE Vernova, United Kingdom;

Interactions of STATCOM controls with low order resonance of offshore transmission cables by Alyssa Jenkins, Kaitlyn Babiarz, Samantha Deeney; Mitsubishi Electric Power Products, Inc., United States of America;

A Wide-band Active Damping STATCOM by Mojtaba Mohaddes, Chandana Karawita, Hiranya Suriyaarachchi; TransGrid Solutions, Canada;

Assessing the Extended MIIF Screening Method for Multi-infeed VSC-HVDC by Christopher Barclay Martin Engstrom, Par Samuelsson, Margareta Jansson; Hitachi Energy, Sweden;

14:00 - 16:00

SESSION 10

Room 520b

C6-3 PLANNING APPLICATIONS FOR IMPROVED DISTRIBUTION SYSTEM MANAGEMENT

Session Chair: Josh Snodgrass

Real-time hardware-in-the-loop testing of grid line monitoring and control apparatus for capacity enhancement of legacy electric grids by Arman Ghasaei[1], Ethan Lan[1], Alex Melancon[2], Christian Cossette[2]; [1]EdgeTunePower Inc., Canada; [2]CO7 Technologies Inc., Canada;

Improved Load Forecasting through Full and Partial Load Transfer Detection by Claire-Isabelle Carlier; Engineered Intelligence Inc., Canada;

Fault Location Based on Shape Matching for Attenuated Traveling Waves in Overhead Line-Cable Hybrid Distribution Grids: A Field Experiment by Tatsuya Maesaka[1], Mutetsu Uchida[1], Shogo Takeuchi[1], Takumi Yoshioka[1], Takaya Anegawa[1], Tetsushi Ono[2], Masato Shiga[2]; [1]Kansai Transmission and Distribution, Inc., Japan; [2]Hitachi, Ltd., Japan;

Improving PV System Dynamics for Grid Code Compliance and Stability by Reda Yousef Ismail Issa, Omar Hikmat AL-Momani; jordan electric power company, Jordan, Hashemite Kingdom of Jordan;

An advanced control strategy based on current limiting to improve fault ride-through capability of three-phase photovoltaic grid-connected inverters by Ahmad Deeb Sawwas[1], Michel Normandeau[2], François Bouffard[1], Geza Joos[1]; [1]McGill University, Canada; [2]Hydro-Québec Research Institute Canada;

Reactive Power Management under High Solar Photovoltaic Penetration in Distribution Networks by BAYAN SULEMAN AL AMRO; Electricity distribution company, Jordan, Hashemite Kingdom of;

A Real-Time Study of Grid-Following and Grid-Forming Distributed Energy Resources in Distribution Grids by Rahul Ranjan Jha, Bo Chen, Sri Raghavan Kothandaraman; Commonwealth Edison, United States of America;

Assessing the Impact of Inverter-Based Resource Penetration and Control Strategies on Switching Overvoltage using EMT Simulations by Prashant Agnihotri, Amgad El-Deib, Hassan Fayaz; Stantec, Canada;

TECHNICAL SESSIONS - MONDAY, SEPTEMBER 29

16:30 - 18:00

SESSION 11

Room 520c

A1-2 PARTIAL DISCHARGE, AI & ML APPLICATIONS

Session Chairs: Peter Albert Wiehe, Howard Sedding

Overview of the Advanced Diagnosis of Generators (DIAAA) Platform for Digital Twin Application by Arezki Merkhouf, Mélanie Lévesque, Olivier Kokoko, Maxime Casavant, Joel PEDNEAULT-DESROCHES; Hydro-Québec, Institut de Recherche, Canada;

Graph neural network auto encoder and deep modular learning for prognostics and health management of hydrogenerators by Ryad Zemouri, Mélanie Lévesque; Hydro-Québec, Canada;

Understanding and Extending Hydro-Generator Capability Through Thermal Diagnostics and Probabilistic Modelling by Ghofril Kahwati[1], Arezki Merkhouf[1], Antoine Tahan[2], Kamal Al-Haddad[2]; [1]Hydro-Québec, Canada; [2]École de Technologie Supérieure, Canada;

Advanced health monitoring of hydrogenerators using VAE including KAN for fault detection and diagnosis using stator vibration signals by Rony Ibrahim[1], Arezki Merkhouf[2], Antoine Tahan[1], Ryad Zemouri[2], Kamal Al-Haddad[1]; [1]École de Technologie Supérieure, Canada; [2]Hydro-Québec Research Center, Canada;

Grid Resilience and Renewable Integration: India's Transition to a Sustainable Power System by Shubhra Shah, Prakash Chand Sharma; NHPC Limited, India;

Requirements for Power System Stabilizer Tuning by Luis Rouco[1], Miguel Cordoba[1], Lukas Sgrist[1], Alejandra Cedenilla-Bote[2], Philippe Carpentier[3], Adrien Guironnet[3], Gilles Torresan[3]; [1]Universidad Pontificia Comillas, Spain; [2]Cresym; [3]RTE France;

16:30 - 18:00

SESSION 12

Room 519a

A3-2 SF6 ALTERNATIVES

Session Chairs: Yannick Kieffel, Bertrand Portal

Beyond SF6 : update on regulations and SF6-free technologies and products to support the decarbonation of the energy by Yannick Kieffel, Bertrand Portal; GE Vernova, France;

Development of a 550 kV 63 kA SF6-free high voltage metal-enclosed circuit breaker by Ennio Errico[1], Michael Lane[1], Matthew Cuppett[1], Hrishikesh Joshi[1], Fei Kong[2], Chen Yang[2], Yong Yang[2], Meng Lei Zheng[2], Valeria Teppati3; [1]Hitachi Energy USA, Inc., United States of America; [2]Hitachi Energy (China) Ltd.; [3]Hitachi Energy (Switzerland) Ltd;

Comparative Research on the Key Properties and Applications of the Novel Eco-friendly Insulating Gas CF3SO2F by Keli Gao[1], Wen Wang[1], Xianglian Yan[1], Baoshan Wang[2], Yu Zheng[2], Yin Huang[1]; [1]China Electric Power Research Institute, China, People's Republic of; [2]Wuhan University;

Innovative approach exploiting the advantages of quantum technology in the search for an alternative to SF6 gas insulation in medium-voltage circuit breakers by Arianne Lemo[1], Mactar Thiam[2], Karl-Igor Pierre[2], Christian Cossette[2], Adam W. Skorek[1]; [1]Université du Québec à Trois-Rivières, Canada; [2]CO7 Technologies;

Pioneering Eco-Friendly Insulation Solutions for HV Instrumentation Inductive Voltage Transformers (IVT) by Afsaneh Keshtkar, Paolo Diamanti, Mahendra Ramnarine, Joseph Arjune; Trench, Canada;

16:30 - 18:00

SESSION 13

Room 520ad

B2-4 CONDUCTOR ICING & DE-ICING INNOVATIONS FOR TRANSMISSION LINE RELIABILITY

Session Chairs: Gelareh Momen, Boris Adum

Research on Icing Characteristics of Low Wind Pressure Conductor by Chao Zhou, Haojie Zhao, Liangchen Zhao, Lin Li; North China Electric Power University, China, People's Republic of;

Three-dimensional Time-varying Icing Model and Key Influencing Factors for Overhead Transmission lines by Lin Li, Yaobin Kang, Liangchen Zhao, Chao Zhou; North China Electric Power University, China, People's Republic of;

Temperature characteristics of OPGW during ice melting process for ±800kv UHVDC overhead line by Bo Peng[1], kunpeng Ji[2], Junhui Li[2], Peng Li[2]; [1]State Grid Company of China, China, People's Republic of; [2]State Grid Electric Power Engineering Research Institute Co., LTD., China, People's Republic of;

Icing Rupture Characteristics and dynamic response of OHL conductor under de-icing impact load by Junhui Li[1], Chao Zhou[2], kunpeng J[1]; [1]State Grid Electric Power Engineering Research Institute Co., LTD., China, People's Republic of; [2]North China Electric Power University;

Study on the influence of conductor inclination angle and twisting factors on ice shape characteristics by kunpeng Ji, Kuanjun Zhu, Junhui Li, Peng Li; State Grid Electric Power Engineering Research Institute Co., LTD.;

Advanced Iron Oxide Nanocomposite Coatings for Efficient De-Icing: Harnessing Electromagnetic Energy for Power Transmission Lines by Shamim Roshan, Reza Jafari, Gelareh Momen; University of Quebec at Chicoutimi, Canada;

16:30 - 18:30

SESSION 14

Room 520e

B3-2 MONITORING & ASSET MANAGEMENT

Session Chairs: Johan Smit, Mark Osborne

Real-Time Condition Monitoring of a Telescopic Disconnector Switch using Fiber Bragg Grating Measurements by Mathieu Kirouac[1], Rosa Elvira Silva[1], Isabelle Castonguay[1], Paul Lefebre[2], Claude Beaulieu[2]; [1]Hydro-Québec, Canada; [2]LxNGen, Canada;

Automated Visual and Thermographic Inspections Applied to Online Substation Monitoring by Germain Bizier, Claude Rajotte, Julien Beaudry; Hydro-Québec, Canada;

Self generating online condition monitoring system for substation equipment by Eric Frenette; Hydro-Québec, Canada;

A Novel Scheme For Utility Fleet Optimum Assets Performance Control by Therence Houngbadji; High Voltage Software Systems (METLAB Research inc.), Canada;

Evolution and Validation of a Sealing System Design for SF6-free Switchgear Applications by Lukas Treier[1], Robert Luescher[1], Maxime Perret[1], Giorgio Dolci[1], Hugo Doligez[2], Charlotte Carbrera[2]; [1]GE Vernova, Switzerland; [2]GE Vernova, France;

Localized cyclone detection and response system for enhanced power grid reliability and safety by Amitkumar Patel, Samiron Roy, Deepak Vinnakota; The Tata Power Company Limited, India;

Smart Asset Management in Substations A Success Story in Battery Bank Digitalization at Bacatá Substation by Mauricio Hernandez Ossa, German Cardenas; ISA INTERCOLOMBIA, Colombia;

A BIM-Blockchain Integration Framework for Improved Documentation and Contract Management in Substation Projects by Heitor Vilela[1], Lucas Vasconcelos[2]; [1]M&V Engenharia; [2]Eletrobras;

16:30 - 18:00

SESSION 15

Room 518bc

B4-2 HVDC - PROJECT PLANNING, DESIGN & TESTING

Session Chair: Bruno Johnny Bisewski

The UMEX HVDC System – A novel Solution for HVDC Modernization and future Upgrade by Carsten Bartzsch[1], Marcus Haeusler[1], Christian Winter[2], Peter Schommer[2], Joanne Hu[3], Bruno Bisewski[3]; [1]Siemens Energy; [2]Minnesota Power; [3]RBJ Engineering;

Kii Channel HVDC Control and Protection System Replacement Project by Shingo NAKANOTANI[1], Ryosuke ITOTANI[1], Ryota TOMOKANE[1], Yoshihito TSUJI[2], Mai SHIBATA[3], Satoshi TAKEMURA[4], Takahiro NAKAGAWA[5], Taihei SATO[6]; [1]Kansai Transmission and Distribution, Inc., Japan; [2]Shikoku Electric Power Transmission & Distribution Company, Inc., Japan; [3]J-POWER Transmission Network Co.,Ltd., Japan; [4]Mitsubishi Electric Corporation, Japan; [5]Hitachi, Ltd., Japan; [6]Toshiba Energy Systems & Solutions Corporation, Japan;

Design Verification Tests of VSC-HVDC Converter Valve for BorWin6 by Zhiyuan HE[1], Rong HU[1], Sheng ZHANG[1], Boya ZHAO[1], Peter LEUSHUIS[2], Yanny FU[2], Christian RAUSCHER[3]; [1]China Electric Power Research Institute, Co. Ltd., China, People's Republic of; [2]TenneT TSO BV, Netherlands; [3]TenneT TSO GmbH, Germany;

Design Verification Tests of Valves for DC Dynamic Braking System of the BorWin6 HVDC Project by Jianbo ZHOU[1], Fuyue WEN[1], Kefeng WANG[1], Yuefeng YNAG[1], Chong GAO[2], Lingyu LIU[1], Peter LEUSHUIS[3], Yanny FU[3], Christian RAUSCHER[4], Bin XU[2]; [1]C-EPRI ELECTRIC POWER ENGINEERING CO., LTD.; [2]China Electric Power Research Institute, Co. Ltd.; [3]TenneT TSO BV; [4]TenneT TSO GmbH;

HVDC Overhead Line and Converter Station Interdependency: A Framework for Streamlined Design by Sage Eliza Smith, Stephen Neuner Koch, Emma June Brown, Rajat Majumder; Invenergy LLC, United States of America;

Transient DC Voltage Control Functionality for Grid Forming Converters of Corinth-Kos HVDC by Georgios Tsourakis[1], Panos Mandoulidis[1], Raveen Gunarath[2], Chandana Karawita[2]; [1]Independent Power Transmission Operator, Greece; [2]TransGrid Solutions Inc.;

CIGRE 2025 International Symposium Palais des congrès de Montréal, Canada • September 29 to October 3, 2025

All times are in EST - Eastern Standard Time (Montreal - Canada)

MONDAY, SEPTEMBER 29

16:30 - 18:00

SESSION 16

Room 520b

C6-4 ACTIVE MANAGEMENT OF MODERN DISTRIBUTION SYSTEMS

Session Chair: Hugo Sanchez-Reategui

Distributed Energy Resources (DER) Management for Wastewater Treatment Plant Using Redundant Centralized Control Scheme—A Case Study by G. M. Asim AKHTAR[1], Will ALLEN[1], Hammad SHOAIB[1], Perry ZHANG[2], Kyle JENSEN[3]; [1]Schweitzer Engineering Laboratories, Inc., United States of America; [2]The City of Calagry; [3]Stantec;

Design and Test of a Local Distributed Energy Resource Management System by Juncheng Wang[1], Michel Normandeau[2], Geza Joos[1], François Bouffard[1]; [1]McGill University, Canada; [2]Hydro-Québec, Canada;

Evaluation of Introducing Reactive Power Injection from PV to the Distribution Grid by Takumi Yoshioka, Takaya Anegawa, Kazutaka Yamamoto, Hiroki Kuriyama; Kansai Transmission and Distribution, Inc., Japan;

Benefits and Challenges of an Advanced Architecture for the Control Room of the Future by Philippe Vié, Fabrice Robert, René Kerkmeester, diljeet singh, Mathieu CARLUER, Olivier Ebert; Capgemini, Canada;

Acceleration of Time-series Distribution Grid Simulation: A Kernel-based Learning Approach by Zhihao Ma, Yanzhu Ye, Yang Bo; Hitachi America, United States of America;

Guidelines for Solar Farms Energization and Connection to Distribution Grids by Mojtaba Rostaghi, Matthew Dubois, Anand Ambardar, Joseph Szwab, Jessie Bauer, Sean Carr; ComEd (An Exelon Company), United States of America;

10:30 - 12:00

SESSION 17

Room 520f

A2-1 A2 POWER TRANSFORMER & REACTOR: RENEWABLE ENERGY APPLICATIONS

Session Chair: Pascal Mueller

Solar Inverter Duty Transformer performance optimization using alternate dielectrics under varying ambient conditions by Parag Chatterjee, Subir Karmakar; NTPC Limited, India;

New conservator design for floating offshore transformers in extreme weather by RUPESH DARIPA[1], Oguzkan SENTURK[2], Vivekkumar CHAUBEY[3], Tobias STIRL[4], Jian ZHANG[5], Rajeev GUPTA[6], Tirdad BOROOMAND[7]; [1]GE Vernova, India; [2]GE Vernova, Turkey; [3]GE Vernova, India; [4]GE Vernova, Germany; [5]GE Vernova, China; 6GE Vernova, United Kingdom; 7GE Vernova, United Kingdom;

Transformers and Reactors for Floating-Offshore- Substations. Technical Requirements, Solutions, Experiences and Outlook by Ewald Werner Taschler[1], Joerg Findeisen[2], Martin Stoessl[1]; [1]Siemens-Energy, Austria; [2]Siemens-Energy, Germany;

Impacts of Reverse Power Flow through Substation Transformers due to high penetration of DERs by Milad Akbari[1], John Penaranda[1], Mohsen Mostafaei[2], Afshin Rezaei-Zare[2]; [1]Hydro One, Canada; [2]York University, Canada;

Enhancing Wind Farm reliability through regular Transformer testing and monitoring solutions by Ahmed El-Rasheed[1], Volney Naranjo[2]; [1]Megger, Canada; [2]Megger, USA;

10:30 - 12:00

SESSION 18

Room 519a

A3-3 SF6 REPLACEMENT IN SWITCHGEAR BY NATURAL ORIGIN GASES

Live Tank 420 kV high-voltage circuit-breaker CO2/O2 -50°C by David BERARD, Antonin BOBEAU, Joel OZIL, Solène LAURENT, Titouan PISSARDGIBOLLET; GE Vernova, France;

Emission-free 420 kV life-tank circuit-breaker by Mark Kuschel[1], Minh. Nguyen[2], Guilhem Blanchet[3], Lukas Binner[1], Maurice Lesser[1], Radu-Marian Cernat[1]; [1]Siemens Energy, Germany; [2]RTE, France; [3]Statnett; Norway;

SF6-free high-voltage live-tank circuit-breaker for extremely cold regions by Ludovic DARLES, Cyril GREGOIRE, Clemence DUMOULIN, Cynthia Kessaci; GE Vernova, France;

Development of SF6-Free 420 kV Gas Insulated bus using CO2/O2 Natural-Origin Gas Mixture as an Alternative to SF6 by Takuya Susuki, Toru Koike, Sebin Attokaren; Toshiba Energy systems & Solutions Corporation, Japan;

Suppression of gas pressure or tank diameter increase of GIS using natural-origin gas by combining FGM spacer and insulation coating technology by Kenji Okamoto[1], Hidetaka Masui[1], Naoki OSAWA[2], Katsumi KATO[3]; [1]Fuji Electric Co., Ltd., Japan; [2]Kanazawa Institute of Technology; [3]N. I. T., Niihama College;

Decarbonizing District Heating: Canada's First Clean Air Installation and Advances in SF6-Free Switching Technology by Eduardo Gomez Hennig[1], Mark Kuschel[2], Peter Gronbach[2], Deryl A Varkey[1], Ben Ellison[3]; [1]Siemens Energy, Canada; [2]Siemens Energy, Germany; [3]Creative Energy, Canada;

10:30 - 13:00

SESSION 19

Plenary Room

B2-5 DLR & WEATHER-DRIVEN INSIGHTS FOR TRANSMISSION LINE MANAGEMENT

Session Chairs: Balint Nemeth, Tetsuya Yamanaka

Boosting Grid Efficiency: GEV Digital Dynamic Line Rating unlocks Grid Capacity by Dragan Trifunovic, Ahmadreza Malekpour; GE Vernova, United States of America;

Dynamic Line Rating based Overhead Line Management Solutions on the High Voltage Distribution System by Dávid Szabó[1], Levente Rácz[2], Gábor Göcsei[2], Bálint Németh[2], Imre Orlay[3]; [1]GridGuard, Hungary; [2]Budapest University of Technology and Economics, Hungary; [3]MVM ÉMÁSZ Áramhálózati Kft., Hungary;

Dynamic Line Rating using Hyper-local weather predictions: A case study covering 5000km Estonian transmission lines by Henri Manninen, Markus Lippus; Gridraven, Estonia;

Enhanced Wind Criterion for Calculating Thermal Capacities of Transmission Lines in Summer by Marc-Olivier Roux; Hydro-Québec, Canada;

A Scalable Method for Forecasting Wind and Dynamic Line Ratings Using Regional Machine Learning Models Trained on Multiple Sensor-Equipped Spans by Alexandre Baré; Ampacimon SA, Belgium;

Discussion on the variability of line temperature along one span by Andrej Vilhar[1], Nika Mlinarič Hribar[2], Amadej Krepek[1], Frank Amand[1], Matjaž Depolli[2], Andrej Souvent[1], Nenad Gubeljak[3], Gregor Kosec[2]; [1]Operato, Slovenia; [2]Jozef Stefan Institute, Slovenia; [3]University of Maribor, Slovenia;

Weather-Based DLR Solution Enhanced by Machine Learning by Jean THOREY, Tanguy JANSSEN, Henri SIMON; RTE, France;

Development of a system for dynamic monitoring of overhead line rating by Kevin Venne, Luc Provencher, Quentin Dollon, Raphaël Rousseau-Rizzi, Pierre Van Dyke; Hydro-Québec, Canada;

"Asset Digitalization meets DLR": Synergies between a Digital Twin Representation of Overhead Line Infrastructure and Dynamic Line Rating by Josef Alois Birchbauer[1], Micaele Dos Santos[1], Martina Fritzel[2], Marion Baroux[1]; [1]Siemens Energy; [2]Gridpulse;

10:30 - 12:00

SESSION 20

Room 519b

C1-1 PS1: INTERCONNECTORS

Session Chairs: Antonio ILICETO, Peter Roddy

Multi-Deterministic System Planning with numerous System Operators by Fabien Laurent Barlet; EDF, France;

The Needed Changes to the Brazilian Interconnected Power System to Keep it in the Course for Net Zero by Nelson Martins[1], Iony Siqueira[2], Paulo Gomes[3]; [1]Brazilian National Academy of Engineering, Brazil; [2]Tecnix; [3]PSQ Consulting;

Challenges in Loop System Configuration for Interconnection Facility Enhancement Plan between Chubu, Kansai, and Hokuriku towards Achieving Carbon Neutrality by 2050 by Mikito Kato, Yasuhiro Kaburaki; Chubu Electric Power Grid Co., Inc., Japan;

Realising The Borneo Grid as a Catalyst for APG by Adrian Wee Sung Sim, Wei Chiun Goh; Sarawak Energy Berhad, Malaysia;

From Disconnection to Integration: The Transformation of the Brazilian Electric Sector over 50 Years by Nayara Souza Montes; Federal University of Juiz de Fora, Brazil, Brazil;

Enhancing Electricity Trade between Thailand and Cambodia: Challenges, Solutions, and the Thailand-Lao-Cambodia Power Integration Project (TLC-PIP) by Worrapong Wonglimamornlert, Suppapit Wongpattanasiri; Electricity Generating Authority of Thailand, Thailand;

TECHNICAL SESSIONS - TUESDAY, SEPTEMBER 30

10:30 - 12:00

SESSION 21

Room 521abc

C4-1 POWER QUALITY & INSULATION CO-ORDINATION IN IBR DOMINATED SYSTEMS

Session Chair: Jean Mahseredjian
Moderator: Frida Ceja Gomez

Harmonic Filter Applications in Green Hydrogen Plant by Zhenyuan Wang[1], Alexandre Naves[1], Yue Xu[2], Pablo Paz[2], Michael Lewis[2]; [1]Hitachi Energy, United States of America; [2]University of Texas at Austin;

A new harmonic electric energy metering scheme considering non-linearity of power by baoping chen, yang yu, ziyu guo, yingying zhang, yi zhang; State Grid Economic and Technological Research Institute Co.Ltd., China, People's Republic of;

A TRV study for Passive Harmonic Filter Circuit Breaker by Kerim Ozer, Timothy Philip Rastall; Enspec Power Ltd, United Kingdom;

Bridging Gaps in LSA Reliability: Introducing the IEC/IEEE 60099-11 Standard for Mechanical Testing and Energy Classification by Florent Giraudet; Independent, Germany;

10:30 - 12:00

SESSION 22

Room 518a

C5-1 C5 RETAIL MARKETS & LOCAL COMMUNITIES

Session Chair: Alexandre Viana

Distributed Energy Resources in the Brazilian Electricity Market by Dalmir Capetta; CHAMBER OF ELECTRICITY ENERGY COMMERCIALIZATION, Brazil;

Implementation of framework for Scheduling, Accounting, Metering and Settlement of Electricity Transactions in India by ADITYA PRASAD DAS[1], MOMAI DEY[1], K B V RAMKUMAR[1], VIVEK PANDEY[1], S USHA[1], S K SOONEE[2]; [1]Grid Controller of India Limited, India; [2]IEEE and CIGRE;

B-sharing: A Blockchain-based Virtual Energy Storage Solution for Solar Users in Thailand's PEA Grid by Kanya Seekhakarn, Teerapong Ponmat, Phanumat Saatwong, Tanakrit Uppala; Provincial Electricity Authority, Thailand;

Battery Electric Vehicles versus Combustion Vehicles: A Total Cost of Ownership Analysis for South Africa by Ndoro Netshipale; Eskom Holdings SOC Ltd, South Africa;

10:30 - 12:00

SESSION 23

Room 520b

C6-5 RELIABILITY & RESILIENCE MEASURES FOR ACTIVE DISTRIBUTION SYSTEMS

Session Chair: Leonardo Leite

An effective Transactive Peer-to-Peer Model for Post-Attack Self-Healing Distributed Load Recovery by Hossein Chabok[1], Ali Moeini[2], Innocent Kamwa[1]; [1]Laval University, Quebec, Canada; [2]Hydro-Quebec Research Institute (IREQ), Varennes, Canada;

Integration of rooftop PV in Distribution Network – Considerations and key challenges by Kiran Singh[1], Pankaj Sharma[2], Yugesh Kumar Dixit[3], Naveen Srivastava[4]; [1]POWERGRID, India; [2]POWERGRID, India; [3]POWERGRID, India; [4]POWERGRID, India;

Blackbox Optimization for Loss Minimization in Distribution Power Networks using Feeder Reconfiguration by Christina G. Soldati[1], Sébastien Le Digabel[1], Antoine Lesage-Landry[2]; [1]Polytechnique Montreal & GERAD, Canada; [2]Polytechnique Montreal, GERAD & Mila, Canada;

Building Resilient Energy Systems: The Role of Hybrid DC-AC PHIL Test Bench in Microgrid Optimization and Sustainability by Mohammad Babaie[1], Nazanin Afrasiabi[1], Mojtaba Ayaz[2], K. S. Amitkumar[1], Chetan Midha[1], Stefan Voinea[1], Jean-Nicolas Paquin[1], Kamal Al-Haddad[2]; [1]OPAL-RT Technologies, Canada; [2]École de Technologie Supérieure, Canada;

Online Monitoring and Fault Diagnosis Model of Low-Voltage Distributed Photovoltaic Operation by Hailong Zhang[1], Hongguang Dai[2], Kuixi Chen[2], Xiangyi Zhang[1], Mengdi Zhai[1]; [1]CHINA ELECTRIC POWER RESEARCH INSTITUTE, China, People's Republic of; [2]Beijing Zhixin Semiconductor Technology Co., Ltd;

Verifications of power supply method using LVDC distribution facilities by Takuya Sakamoto[1], Kento Yonezawa[1], Yasunori Oka[1], Masayuki Wakutani[1], Takumi Yoshioka[1], Takaya Anegawa[1], Kazuo Hisatomi[2], Yuya Kawachi[2], Kazuma Okamoto[2], Yasutaka Nishigaki[2], Kazuki Ogawa[2], Hiroyuki Ono[2]; [1]Kansai Transmission and Distribution, Inc., Japan; [2]DAIHEN Corporation, Japan;

13:30 - 15:30

SESSION 24

Room 520c

A1-3 CONDITION MONITORING & ASSESSMENT

Session Chairs: John Letal
Greg Stone

Development of a Diagnostic Strategy for Large Hydrogenerator Rotors by Olivier kokoko, arezki merkhouf, Mélanie Levesque, Simon Bernier; Hydro-Quebec, Canada;

Advancing Reliability: Case Studies on Offline Diagnostic Testing for High-Voltage Turbo Generators by Sunny Gaidhu, Krzysztof Pyc, Ashfak Shaikh; Kinectrics, Canada;

Diagnostic Methods Of Synchronous Machines With Salient Poles Using Airgap Flux, Pole Leading Edge Induction Voltage, Stray Flux Measurement And Ampere-Turns measurements by Simon Bernier[1], Arezki Merkhouf[1], Olivier Kokoko[1], Kamal Al-Haddad[2]; [1]Institut de recherche d'Hydro-Québec(IREQ), Varennes, Canada; [2]École de technologie Supérieure, Montréal, Canada;

Hydro-generator condition-based monitoring system modernization for maintenance optimization by Aaron Doyle[1], Ozren Oreskovic[2], Ozren Husnjak[2]; [1]Qualitrol - Iris Power, Canada; [2]Veski;

Importance of Polarity test of stator winding as pre-commissioning test for Hydro Generators by Suprakash Adhikari, Niraj Kumar Singh, Ashwatthama Tiwary, Pranav Kumar; NHPC Limited, India;

Hydro-unit increased vibration case study by Ozren Husnjak[1], Ozren Oreskovic[1], Aaron Doyle[2]; [1]Veski, Croatia; [2]Qualitrol - IRIS Power, Canada;

Overview of Localized Partial Discharge Activity Analysis with Results from Dissection of Individual Stator Bars and Coil by Alexandre Simard[1], Mélanie Lévesque[2], Éric David[1], Hélène Provencher[2]; [1]École de Technologie Supérieure, Canada; [2]Hydro-Québec, Canada;

Evaluation of Turbo Generator Stator Bushing Condition Monitoring by Katudi Oupa Mailula[1], Sandile MOLOI[2], Promise MBANGA[3], Simon HIGGINS[4]; [1]Eskom RT&D, South Africa; [2]Eskom RT&D, South Africa; [3]Eskom RT&D, South Africa; [4]Eskom Generation, South Africa;

13:30 - 15:30

SESSION 25

Room 520f

A2-2 A2 POWER TRANSFORMER & REACTOR: ASSET MANAGEMENT

Session Chair: Khayakazi Dioka

Consolidating Transformer Online Monitoring and Maintenance Data for Condition Assessment and Prescriptive Maintenance of Power Transformers by Nathan Jacob[1], Marco Tozzi[2], Anatoliy Mudryk[2]; [1]Camlin Energy, United States of America; [2]Camlin Energy, Northern Ireland;

Climate Change Impact for Power Transformers by Edward Gerald teNyenhuis; Hitachi Energy, Canada;

A2_PS2_USA_Rossini_ Installation of transformer monitoring solutions and its impacts on data collection and analysis by Yuri Monteiro Rossini[1], Francis Felipe Mantoan[1], Leandro Crispim Favoretto[2]; [1]Siemens Energy, United States of America; [2]Siemens Energy, Brazil;

Strategic Approaches to Determine the Lifetime of Power Transformers by Ryota Kuriyama, Tadao Minagawa, Yoichi Nakashima, Kenichi Mino, Yoshinobu Kitagawa, Tsuyoshi Amimoto, Noritaka Takehira, Takumi Fujino; Mitsubishi Electric Corporation, Japan;

Power Transformers as Potential Bottleneck for Grid Expansions by Thomas Friedrich Kessler; Siemens Energy, Germany;

Strategies for Fast Replacement of Transformers and Reactor Units by Luis Chavez[1], Ricardo Quijada[2]; [1]Independent Consultant; [2]AtkinsRéalis, Canada;

Dynamic Condition Assessment of Substation Equipment Leveraging an Asset Performance Management System by Robert Otal, Alex Ferguson, Charles Austria, Shanon Lo, Travis Squires; BBA, Canada;

Strategy for Extending Power Transformer Service Life by Stéphane Proulx, Patrick Picher, Claude Rajotte; Hydro-Québec, Canada;

13:30 - 15:30

SESSION 26

Room 519a

A3-4 HVDC & ASSET MANAGEMENT

Session Chair: Frank Richter

Maintenance Strategies for Disconnectors According to Substation Corrosiveness by Catherine Le Postec[1], Hélène Gauthier[2]; [1]Hydro-Québec, Canada; [2]IREQ, Canada;

Dielectric performance of HVDC disconnectors: Updates on RIV and pollution testing also combined with icing conditions by EROS STELLA, MARCO NOSILATI, RODOLFO SARACENI, DAVIDE MOMESSO; GE Vernova, Italy;

Wind-induced vibration characteristics test and control technologies of ±800kV converter station disconnectors in strong wind areas by Peng Li, kunpeng Ji, Junhui Li, Kuanjun Zhu; State Grid Electric Power Engineering Research Institute Co., LTD., China, People's Republic of;

Electric field simulation calculation andlong term charging performance of 550kV DC GIS/GIL by Congpeng Huang, Yajun Qiang, Dingyu Feng; SIEYUAN ELECTRIC CO.,LTD, China, People's Republic of;

Asset Transparency and Scenario Planning for Resilient Grids by Erhard Aumann, Puneet Singh, Edwin Mora, Thomas Schmidt, Mathias Duckheim; Siemens, Germany;

Environmental, economic and program advantages of equipment refurbishment by Matthew Iles, Bradley Brown, Mark Waldron; National Grid, United Kingdom;

Risk evaluation framework for power grid resilience to extreme weather events by Jishnudeep Kar[1], Lena Peter[2], Ashwin Shirsat[1], Elise Fahy[3]; [1]Hitachi Energy Research, United States of America; [2]Hitachi Energy Research, Germany; [3]Hitachi Energy, Switzerland;

CIGRE 2025 International Symposium Palais des congrès de Montréal, Canada • September 29 to October 3, 2025

All times are in EST - Eastern Standard Time (Montreal - Canada)

TECHNICAL SESSIONS - TUESDAY, SEPTEMBER 30

13:30 - 15:30

SESSION 27

Plenary Room

B2-6 INNOVATIVE TOWER SOLUTIONS FOR HIGH-ALTITUDE, AGING, & RENEWABLE GRIDS

Session Chairs: Sébastien Langlois
Dragan Komljenovic

Challenges faced and mitigation thereof to facilitate Green Power & Nuclear Power Flow in Gujarat region, India by Chandan Kalra, Amit Mahajan, Rajesh Suri, Kandarp Pandey; Sterlite Power Transmission Limited, India;

Conductor Optimization for +/-350kV HVDC Transmission system for evacuation of 13 GW of RE power from renewable energy parks in Ladakh, India by Chandra KANT, Ashish Kumar SINGH, Nikhil JHA, Manoj Kumar SINGH, Abhay KUMAR, Vamsi Rama Mohan BURRA; POWER GRID CORPORATION OF INDIA LIMITED, INDIA;

The Milano-Montalto ± 525 kV HVDC Link: Technical challenges and sustainability by Luca Buono, Gaia Leone, Francesco Palone, Lorenzo Papi, Roberto Spezie, Pierluigi Vacante; Terna Rete Italia, Italy;

Development Trend Analysis and Key Technologies of UHV AC Transmission System in China by Weilin Hou, Shicong Ma, Yiran Jing, Tiezhu Wang, Bo Li; China electric power research institute, China, People's Republic of;

Navigating the Energy Transition: A Comparative Study of Aging Power Grids in India and the USA by Vipin Jacob Joseph, L K Khajkumar; Power Grid Corporation of India Limited, India;

High-Voltage Iconic Towers by Maha Alsabban[1], Mudassar Rasul[1], Tobias Schuelein[1], Grain Adam[1], Janos Toth[2], Birgir Hallgrimsson[3], Thorgeir Holm Olafsson[3], Jin Choi[4], Thomas Shine[4]; [1]ENOWA-NEOM, Saudi Arabia; [2]Enginomix, United States; [3]Norconsult, Norway; [4]Choi+Shine Architects, Netherlands;

Structural damage monitoring system for transmission towers based on artificial intelligence by Halyson da Costa Silva[1], Leonardo Hautrive Medeiros[1], Tiago Bandeira Marchesan[1], Vitor Cristiano Bender[1], Daniel Pinheiro Bernardon[1], Tiago dos Santos[1], Alexandre Aparecido Buenos[1], José Batista Ferreira Neto[2], Diogo José Damasceno do Espirito Santo[2], Daliane Lanzarin[2]; [1]Federal University of Santa Maria, Brazil; [2]Santo Antônio Energia, Brazil;

Development and deployment of VibraTorre equipment by Carlos Alexandre DO NASCIMENTO[1], Antonio ASSIS[1], Maurissone GUIMARAES[2], Giovani BRAGA[2], Alysson BARBOSA[3], Andre MELO[3], Alan DEIVIDE[3], Paulo PINTO[3]; [1]Cemig GT, Brazil; [2]Cemig D, Brazil; [3]Trixel, Brazil;

13:30 - 15:30

SESSION 28

Room 520e

B3-3 SUBSTATION CONCEPTS

Session Chairs: Shinki Noguchi
Hugh Cunnigham

Emission-free natural-origin gas alternatives to SF6 for MV and HV substations by Mark Kuschel[1], Hiroyuki Hama[2], Manjunath Ramesh[3], Christophe Preve[4], Thomas Dürr[5], Daniel Schiffbauer[6]; [1]Siemens Energy; [2]Mitsubishi Electric; [3]Nuventura; [4]Schneider Electric; [5]Siemens; [6]Toshiba;

Nominal Current Rating of Equipment Connected to Power Transformer Neutral by Olivier Turcotte, Frédérick Dubé, Duong François; Hydro-Québec, Canada;

Concepts for on-site HV Testing of GIS after Installation, Extension, Retrofit or Repair by Andreas Laubi[1], Mark Reuter[2], George Becker[3], Robert Vosse[4]; [1]Aurecon, Australia; [2]Siemens Energy, Germany; [3]Power Engineers, USA; [4]DEP, Netherlands;

Investigations on the use of Dry Air as a Retrofill gas Alternative to SF6 in existing Gas Insulated Switchgears by Caterina Toigo[1], Victor Petit[1], Lydie Cossedu[2], Michael Inversin[3], Vivien Dona[2], Alain Girodet[1], Marie Laure Allard[3]; [1]SuperGrid Institute, France; [2]MasterGrid, France; [3]RTE, France;

Advancing Ground Stability: Vibro Stone Columns as an Innovative Solution for Liquefaction Mitigation. by MONA KHANDELWAL, SATYENDRA KUMAR PRASAD, SANJAY SHARMA, ABHAY KUMAR, RAMA MOHAN BURRA VAMSI; POWERGRID CORPORATION OF INDIA LIMITED, India;

Upgrading Legacy Feeder Bay Installations to meet Current and Future Network Requirements and Regulatory Compliance for Parallel and In-Line Feeder Configurations Existing Substations by Shivern Singh; Eskom NTCSA, South Africa;

Improvement in Reliability of Substation by In-Situ Replacement of 220 kV Indoor GIS at Tata Power, Mumbai by Dayanand Konduskar[1], Subhash Vetcha[1], Vidyadhar Ghodekar[1], Balaji Sethuraman[1], Rambabu Katari[2]; [1]The Tata Power Co Ltd, India; [2]Toshiba T&D, India;

Enhancing Electrical Substation Safety: A Novel Seasonal Analysis Approach to Soil Resistivity Modelling for Grounding System Design by Jayson Patrick, Edstan Fernandez, Ali Bazaei; ELEK Software, Australia;

13:15 - 15:30

SESSION 29

Room 518bc

B4-3 HVDC - CONTROL, PROTECTION & PERFORMANCE

Session Chair: Peter Scott Schommer

Evaluation of Fast Power Control Functionalities of Type 4 Wind Plants during Disturbances in VSC HVDC Systems Connected to Isolated Generation by Raveen Gunarath, Chandana Karawita, Hiranya Suriyaarachchi, Mojtaba Mohaddes; TransGrid Solutions, Canada;

Innovative Impedance Protection for HVDC AC Filters: A Case Study from Hydro-Québec by Pierre-André Chiasson, Sébastien Tremblay; Hydro-Québec, Canada;

Synchronous Grid Forming Control Concept for Point-to-Point HVDC by Taoufik Qoria[1], Carl Barker[2], Omar Jasim[2], Fainan Hassan[2]; [1]GE Vernova, Germany; [2]GE Vernova, United Kingdom;

A New Approach for HVDC Links DMR Line Supervision, Based on Real-Time Impedance Monitoring System by Ali Dariani; ATKINSREALIS, Canada;

Hybrid MMC-HCC Adaptability in Weak AC System Connections by Xiaoguang Wei, Zhixiang Zhang, Song Li, Taosha Jiang, Hui Du; Beijing Huairou Laboratory, China, People's Republic of;

Protection Coordination of the 100% Grid Forming Based Offshore Wind Farm Connecting to an Offshore Diode Rectifier Unit HVDC Substation for Renewable Hydrogen Production by Songda Wang[1], Zheran Zeng[2], Dongsheng Yang[2], Yin Sun[1], Benjamin Palethorpe[1]; [1]Shell International Solutions B.V., Netherlands, The; [2]TU Eindhoven;

DC Fault Performance of HVDC-MMC Bipolar Configuration with DC overhead-line by HANI SAAD[1], Isabelle GALARNEAU[2], Laurent HOULE[3], Martin FECTEAU[4], Omar SAAD[5]; [1]ACDC TRANSIENT; [2]Hydro-Quebec; [3]Hydro-Quebec; [4]Hydro-Quebec; [5]Hydro-Quebec;

Effects of AC cables between HVDC station and grid access point on HVDC system design: A case study of 2GW bipole systems by Sertkan Kabul[1], Amit Singh[3], Gagan Deep[3], Md Tabish Ansari[3], Amit Kumar[2], Zameer Ahmad[4], Ben Kox[4]; [1]GE Vernova, Netherlands; [2]GE Vernova, UK; [3]GE Vernova, India; [4]TenneT, Netherlands;

Offshore HVDC switching station for connection of offshore wind farms by Bojan Pouckovic[1], David Reid[2], Ana Petrovic[1]; [1]Mott MacDonald, Serbia; [2]Mott MacDonald, United Kingdom;

13:30 - 15:30

SESSION 30

Room 519b

C1-2 PS1: RENEWABLE ENERGY SOURCES

Session Chairs: Antonio ILICETO
Peter Roddy

Assessment of connection concepts for Germany's far out North Sea offshore wind areas for an efficient energy transition by Tuncay Türkucar; E-Bridge Consulting GmbH, Germany;

Value of Grid Enhancing Technologies for the Integration of Renewable Energy Sources by Nicolas Omont[1], Felipe Gonzalez Venegas[1], Adèle Des Moutis[1], Antons Kutjuns[2], Didzis Sulcs[2], Thomas Brouhard[1]; [1]Artelys, France; [2]AST, Latvia;

Techno-Economic Evaluation of the Use of Topological Actions in an Electrical Energy Hub with Large Penetration of Offshore Wind by Giacomo Bastianel[1,2], Dirk Van Hertem[1,2], Hakan Ergun[1,2]; [1]KU Leuven; [2]Etch - Energyville, Belgium;

Challenges and Practices in Integrating Large-Scale Renewable Energy into Canada's Electricity Grid by Tatiana Guerrero, Eric Breault, Nishant Gehani; BBA Consultants, Canada;

Challenges of Strategic Grid Renovation and Investment Plan in the Tokyo Bay Area to meet RES-Dominant Era by Hajime Hirano, Junichi Takaue; Tokyo Electric Power Company Power Grid, Inc,

History of Effort for the Acceleration of Renewable Energy Integration in Japan by Mitsuhiko Tato[1], Koichiro Yamaki[2], Zerui Dong[2], Wei Li[1], Aditya Ashok[2]; [1]Tokyo Electric Power Company Power Grid, Inc., Japan; [2]Tokyo Electric Power Company Holdings, Inc.,

Green Grid Initiative: Advancing Renewable Energy Integration and Transmission System Optimization - Indian Perspective by Amandeep Kala; Powergrid Corporation of India Limited, India;

Hydro-Thermal System Optimization in Georgian Power System for Enhanced Resource Utilization and Decarbonization by Pikria ELIZARASHVILI, Tamar JIKIA; Georgian State Electrosystem JSC, Georgia;

13:30 - 15:30

SESSION 31

Room 521abc

C4-2 ADVANCED SIMULATION METHODS FOR STABILITY ANALYSIS IN IBR DOMINATED SYSTEMS (PART-1)

Session Chair: Flavio Fernandez
Moderator: Gilles Chaspierre

Performing Interconnection Studies with a Wide-Area EMT Model with sensitive Information through a Cloud Portal. by Henry GRAS[1], Anton STEPANOV[1], Víctor Guerrero VELAR[2], Sebastien DENNETIERE[3], Jean MAHSEREDJIAN[1]; [1]PGSTech; [2]Coordinador Electrico Naciona; [3]RTE international;

Hybrid Simulation for Stability Evaluation of Grid-Forming Control in Inverter-Based Power Systems by Ziming Dong, Sheraz Baig, Ning Lin, Jeff Bloemink; Powertech Labs Inc., Canada;

Real-Time Laboratory Featuring Photo-Voltaic Generation System Operating in MIL, CHIL, and PHIL Modes by Angelo Chrabieh[1], Wolf Peter Jean Philippe[1], Joel Pfannschmidt[1], Danielle S. Nasrallah1, K. S. Amitkumar1, Gevorg Parsyan2, Ashot Minasyan2; [1]OPAL-RT TECHNOLOGIES, Canada; [2]Bitlismen;

Hydro-Québec EMT validation of system operating limits in a radial network with a high penetration of wind generation by Francis Lavigne, Billy Labelle; Hydro-Québec, Canada;

Electromagnetic Transient (EMT) Simulation for Detection of Sub-Synchronous Oscillations with Bulk Inverter Based Resources in Power System: A Typical Case Study with Mitigation Methods by SATISH KUMAR ANCHA[1], Zerui Dong[2], Wei Li[1], Aditya Ashok[2]; [1]OPAL-RT TECHNOLOGIES, Canada; [2]OPAL-RT Corporation, USA;

Optimization of Battery Energy Storage System Placement and Parameters for Frequency Stability in Renewable-Intensive Power Systems by Mina Malekan, Shaahin Filizadeh; University of Manitoba, Canada;

Active Power Control of Wind Turbines for Secondary Frequency Regulation in Power Systems: A Co-Simulation Approach Developed at Hydro-Québec by Seyed Masoud Mohseni-Bonab, Atieh Delavari, Alexandre Besner, Louis Gibson

TECHNICAL SESSIONS - TUESDAY, SEPTEMBER 30

13:30 - 15:30

SESSION 32

Room 518a

C5-2 C5 DATA ANALYTICS WITH THE ELECTRICITY MARKETS

Session Chair: Anant Venkateswaran

Large Time Series Models for Electricity Prices: Performance on Zero-Shot Forecasting by Nandinee Haq, Jhelum Chakravorty; Hitachi Energy Research, Canada;

Predicting Day-Ahead Electricity Prices in Western Denmark (DK1) Using Bayesian Deep Learning: Robust Intervals and the Role of Renewable Energy by İnayet Özge AKSU[1,2], Sina Ghaemi[2], Amjad Anvari-Moghaddam[2]; [1]Department of Artificial Intelligence Engineering, Adana Alparslan Türkeş Science and Technology University, Turkey; [2]Department of Energy (AAU Energy), Aalborg University, Aalborg, Denmark;

Integrating LSTM forecasts of Renewable Energy into Day-Ahead Electricity Market Modelling: a case study of Alberta by Farshid Kamrani, Kristen Rene Schell; Carleton University, Canada;

Analysis of Price Maker Hybrid PV Plants with Forecasting-based Bidding Algorithm in a Day-ahead Market by Xi Chen[1], Siyi Zheng[2], Lifei Tu[3], Yue Chen[4], Ziang Zhang[1]; [1]Binghamton University; [2]Georgia Institute of Technology; [3]Non-affiliation; [4]National Renewable Energy Laboratory;

The Rise of Very Low Prices in European Electricity Markets by Conal Campbell, Mark Needham; EirGrid;

Advanced Monitoring and Machine Learning in the Electricity Market: Preventing Manipulation and Classifying Behaviors in Auctions and Continuous Negotiations by Sixto Siliuto, Julio Hornos, Juan Bogas; OMIE, Spain;

13:30 - 15:30

SESSION 33

Room 520b

C6-6 ENERGY EFFICIENCY APPLICATIONS IN BUILDINGS & DISTRUBUTION SYSTEMS

Session Chair: Michael Ross

Addressing Uncertainty in the Activation of Thermal Flexibility in Buildings by Felix Stegemerten, Martin Rätz, Dirk Müller; RWTH Aachen University, E.ON Energy Research Center, Institute for Energy Efficient Buildings and Indoor Climate;

Distributed grid-aware control of air-conditioning demands using adaptive flexibility function by Nariman Mahdavi; CSIRO, Australia;

Synergistic planning for optimal renewable energy portfolios in commercial and industrial buildings by Omid Aghapour, Akhtar Hussain, Innocent Kamwa, Hajar Abdolahinia; Department of Electrical and Computer Engineering, Laval University, Quebec, Canada;

Demand side flexibility from consumer side resources : Interoperability challenges and opportunities by Subbu Sethuvenkatraman[1], Tobias K.S. Ritschel[2], Henrik Madsen[2], Stephen White[1]; [1]CSIRO, Australia; [2]DTU;

Buildings energy demand impact studies on the low-voltage distribution network of Montreal by Bilal Khan[1], Saifullah Shafiq[2], Hayat Ullah[1], Oriol Gavalda-Torrelas[1], Ursula Eicker[1]; [1]Concordia University Montreal, Canada; [2]The University of Queensland, Australia;

16:00 - 18:00

SESSION 34

Room 520c

A1-4 CONDITION MONITORING & ASSESSMENT

Session Chairs: John Letal
Greg Stone

Rotor Temperature Continuous Monitoring using Fiber Bragg Gratings by Hélène Provencher[1], Arezki Merkhouf[1], Serge Sarraillon[1], Isabelle Castonguay[2], Charles Prévost[3], Anne-Marie Carita[3]; [1]Institut de recherche d'Hydro-Québec; [2]Hydro-Québec, Canada;

Environmental Impacts of Manufacturing and Renovation of High Voltage Rotating Machines and Power Plants by Anna Gegenava, Aleksandr Khazanov, Aleksei Nikolaev; National Electric Coil, United States of America;

Proposal for Methodological Note of Life Cycle Assessment: Eco-design of Turbogenerator by Robert MEYER, Vincent FERNAGUT, Raul MORALES; EDF, France;

Optimization process applied to Synchronous Generator designs to improve machine key parameters to suit Synchronous Condenser applications by Frantisek Zeman, Robert Thornton-Jones; Baker Hughes - Brush Power Generation;

The Lack of Air-gap Orthogonality and Parallelism Impact Upon the Unbalanced Magnetic Pull by Mauro Uemori[1], Jorge Johnny Rocha Echeverria[2], Edson da Costa Bortoni[3]; [1]Trassínio Consultoria Ltda, Brazil; [2]Trassínio Consultoria Ltda, Brazil; [3]UNIFEI - Universidade Federal de Itajubá;

Research on Stagnation Zone Based on RTD Method and Improvement of Coupled Fluid-solid Heat Transfer Considering Mesh Morphing by dongxiao chen[1], yuting gao[1], guifen li[2]; [1]wuhan university, China; [2]Harbin Electric Machinery Company Limited , China;

Development of the new Type of Carbon Brush for Adjustable Speed Generator-Motor by Hiroshi Hatano, Fumio Sawa, Hidehito Matsuzaki, Hiroaki Ishizuka, Ooki Osada, Minori Onodera; Toshiba Energy Systems & Solutions Corporation, Japan;

Endurance tests of power electrical connections in bolted assembly by Nicolas DEBERNE, Younes HAMDAN; EDF, France;

16:00 - 18:00

SESSION 35

Room 520f

A2-3 A2 POWER TRANSFORMER & REACTOR: ARTIFICIAL INTELLIGENCE & DIGITALIZATION

Session Chairs: Patrick Picher
Julia Wagner

Machine Learning Applied to Anomaly Diagnosis in Transformers and Reactors Using Gas Chromatography by Rafael Ferreira[1], Thiago Sanchez[1], Tatiana Escovedo[2], Marcos Kalinowski[2]; [1]Eletrobras CGT Eletrosul, Brazil; [2]PUC-RJ, Brazil;

Advances in Data-Driven Models for Digital Twins of Power Transformers by Sruti Chakraborty[1], Mauricio Soto[2], Alexander Alber[3], Brian Sparling[4], Patrick Picher[5], Federica Bragone[6]; [1]OMICRON Electronics, Austria; [2]Hitachi Energy, United-States; [3]Hitachi Energy, Germany; [4]Kinectrics, Canada; [5]Hydro Quebec, Canada; [6]KTH University, Sweden;

Application of Machine Learning on Prediction of Power Transformer No-Load Losses by Bruno Bosnjak, Walter Lee; GE Vernova;

Approach, experiences and lessons learned in a fault developing HV transformer:Case Study perspective by Parag Chatterjee, Sushil Kumar; NTPC Limited, India;

Application of Machine Learning Interpretability and Explainability Metrics in FRA of Transformers by Gabriel Lopes; Siemens Energy, Germany;

Digital Transformation (DX) in Power Transformer Manufacturing: Enhancing Efficiency and Precision by Shigeyoshi Yoshida, Daisuke Ueno, Atsushi Yamatake, Yoshinobu Kitagawa, Kenichi Mino, Mitsugu Ueda, Tadao Minagawa, Hirotaka Muto; Mitsubishi Electric Corp, Japan;

A Novel Hybrid Multilayer Model for Diagnosing Faults in Power Transformers Through Dissolved Gas Analysis (DGA) by Mouloud Bouzar[1], issouf Fofana[1], Patrick Picher[2]; [1]Canada Research Chair Tier 1 in the Aging of Oil-Filled Equipment on High Voltage Lines (ViAHT), Université du Québec à Chicoutimi (UQAC), Chicoutimi, QC G7H 2B1, Canada; [2]Hydro-Québec's Research Institute;

Advancing Power Transformer Monitoring: Machine Learning-Based Temperature Monitoring by Hoda Jalali, Avinash Jain; VIE Technologies, United States of America;

16:00 - 18:00

SESSION 36

Room 519a

A3-5 MISCELLANEOUS

Session Chair: Nicola Gariboldi

Trends in Distribution Networks and influence on MV Equipment by Christian Heinrich[1], Terrance Woodyard[2], Stephen Manke[2]; [1]Siemens AG, Germany; [2]Siemens Industry, USA;

Grid Integration of DER - Energizing Medium-Voltage Power Transformers in Wind Turbine Generators - Grid Code Compliance : Industrialized Applications and Operation of Low-Power Instrument Transformers, Three-Pole Operated Vacuum Circuit Breakers and Controlled Switching Devices to Mitigate Transformer Inrush Currents and Voltage Dips. Case Study and Potential for Wind Turbine Repowering by Lukas Cesky[1], Laurent Poutrain[2], Michail Theodoridis[3], Venkata Surya[4], Vaclav Prokop[1]; [1]ABB, Brno, Czech Republic; [2]Vizimax Inc., Canada; [3]Vestas, United Kingdom; [4]Vestas, India;

Demonstration application results of the 10 kV magneto-biased superconducting current limiter (MBSFCL) in Liaoning urban power grid in China by Jiahui Zhu, Xiaotian Su, Panpan Chen; China Electric Power Research Institute, China, People's Republic of;

Methodology for Oscillograms Analysis and Condition Indicators Assessment by Automated Algorithms for Circuit-Breaker Diagnostics by Nathan Lefebvre[1,2], Antoine Mailhot[1], Ryszard Pater[1], Michel Gauvin[1], René Doche[1], João Pedro Trovão[2]; [1]Hydro-Québec, Canada; [2]Université de Sherbrooke, Canada;

Seven years Operational Experience of Fixed Series Compensator (FSC) at GIS Kala Amb - Learnings and Challenges by Abhay Kumar, Shafat Ahmad Wani, Jagat Ram, Abhishek Bhardwaj; Powergrid Corporation of India Limited, India;

CIGRE Survey on UHV equipment by Hiroki Ito[1], Masayuki Kosakada[2]; [1]Mitsubishi Electric, Japan; [2]Toshiba Energy Systems & Solutions, Japan;

Future UHV substation technology in Japan by Norihiro Kasahara[1], Masayuki Kosakada[1], Takayuki Kobayashi[1], Toshiyuki Saida[1], Shigeyuki Tsukao[2], Tomoaki Ito[2], Syuichi Tamura[2], Yuki Ishikawa[2]; [1]Toshiba energy systems & solutions Co. JAPAN; [2]TEPCO Power Grid, Inc. JAPAN;

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TECHNICAL SESSIONS - TUESDAY, SEPTEMBER 30

16:00 - 18:45

SESSION 37

Plenary Room

B2-7 EMI, HVDC, CORONA, & UPRATING INNOVATIONS

Session Chair: Isabelle Galarneau

How Specific Overhead Line Design Parameters Affect Clearances Necessary to Limit Induced Discharges from Vehicles to Safe Levels of 5mA or Less by Alexander Lucas; POWER Engineers, Canada;

Electric Field of HVDC Overhead Transmission Lines in an Urbanized Context by Luca Buono, Francesco Calabrese, Gaia Leone, Francesco Palone, Lorenzo Papi, Davide Rufini, Roberto Spezie, Gabriele Tresso; Terna Rete Italia, Italy;

B2_PS2_Canada_Chen Wang_Mitigating AC Electromagnetic Interference near Rail Corridors - A Case Study of the Southwest Winnipeg Transmission Improvement Project by Chen Wang, Emerson Adajar; Manitoba Hydro, Canada;

Predicting Flashovers on HVDC Transmission Lines Using Machine Learning and Weather Data by Susmita Saha[1], Jeff Laninga[1], Behzad Kordi[2]; [1]Manitoba Hydro, Canada; [2]University of Manitoba, Canada;

Development of World's First 500kV Double Bi-pole HVDC Overhead Transmission System with Metallic Return in Korea by Wonjae Lee[1], Seongweon Kim[1], Dongkyu Kim[1], Hyeonggeun Kim[1], Shulsoo Seo[1], Seyong Kim[1], Sunghak Lee[1], Dongil Lee[2]; [1]KEPCO(Korea Electric Power Corporation), Korea, Republic of (South Korea); [2]CIGRE Korea;

Voltage Stress Characteristics and Insulator Options for Dedicated Metallic Return in Bipolar MMC HVDC Overhead Transmission Systems by Domagoj Hart[1], Jean-Marie George[2], Damien Lepley[2], Hani Saad[3], Markus Vor dem Berge[1]; [1]RTE international, France; [2]Sediver, France; [3]ACDC Transient, France;

Operational Experiences in Mitigating Atmospheric Discharge Damage to OPGW Cables Installed on High Voltage Lines by Yasert David Perez Araque, Juan Guillermo Maya Montoya, David Ernesto Gómez Torres; ISA INTERCOLOMBIA S.A. E.S.P.;

Corona Inception Field Stresses at Water Drops on Silicone Surfaces at AC and DC and Mixed (Hybrid) Voltages - New Insights from Laboratory Tests by Jens Martin Seifert[1], Fabian Lehretz[2]; [1]TKE GmbH, Germany; [2]TenneT TSO GmbH, Germany;

Corona Effect Constraints in OHL upgrading using HTLS Conductors by Pierluigi Vacante, Francesco Palone, Gaia Leone, Gabriele Tresso; Terna Rete Italia, Italy;

Research on coated conductor by Yuta MATSUDA, Tomonori SHIRAISHI, Noriyuki TAKADA; TEPCO Power Grid, Inc.;

Uprating of lines from 275kV to 400kV on the South African network by Sanjay Narain, Raeesa Khan, Kaveer Ramharak, Amish Roopnarain; NTCSA, South Africa;

16:00 - 18:00

SESSION 38

Room 520e

B3-4 SUBSTATION CONCEPTS

Session Chairs: Mark Kuschel
George Becker

Experience of designing high voltage substation in hilly terrain at high altitude, cold temperature, and steep slope for evacuating power from hydro electric projects on hills for enhancing non-fossil fuel energy capacity of Indian electricity grid by DIBYENDU DEY CHAKRABORTY; POWER GRID CORPORATION OF INDIA LTD, India;

New Aspects of 420 kV GIS on-site Testing and PD Monitoring and Diagnostics by Claus Neumann[1], Uwe Schichler[2]; [1]Darmstadt University of Technology, Germany; [2]Graz University of Technology, Austria;

SF6-free Offshore GIS Substation with High-Power GIB crossing Fire-Resistant Sections by Robert LUESCHER[1], Lukas TREIER[1], Yang OUYANG[1], Maxime PERRET[1], Hui HUANG[2]; [1]GE Vernova, Gas Insulated Substations, Grid Solutions, Oberentfelden Switzerland; [2]GE Vernova, Grid Solutions, Suzhou China;

Standardisation of SF6-free 245kV and 420kV GIS for multiple gas solutions by Tommie Barbe[1], Arnaud Ficheux[1], Michael Inversin[2]; [1]GE Vernova, France; [2]RTE, France;

Bay extension challenges and strategies for seamless Integration in India's Renewable Energy substations by Pankaj Kumar JHA, Ramjash BHAKAL, Kuleshwar SAHU; Power Grid Corporation of India Ltd., India;

Enhancing Resilience with Mobile Substations: Lessons from TEİAŞ's Response to the Kahramanmaraş Earthquake by Tunahan Akbaş[1], Mehmet İmeryüz[1], Tamer Özkahraman[1], Bilgehan Tekşut[2], Umut Yener[2]; [1]EKOS Electric, Turkiye; [2]Türkiye Elektrik İletim A.Ş. (TEİAŞ), Turkiye;

Results of the International Survey on Earthquake Damage Experience and Seismic Design of Substations by WG B3.64 by Atsushi ETO[1], Edgar RAMOS CORDERO[2], Hiroaki SATO[3], Leon KEMPNER[4], Sheng LI[5]; [1]Tokyo Electric Power Company HD, Japan; [2]Siemens Energy, Germany; [3]CRIEPI, Japan; [4]Bonneville Power Administration, USA; [5]University of Science and Technology Beijing, China;

Challenges and solutions in the design, erection, testing, commissioning, and Field trials of medium voltage double bus Gas-Insulated Switchgear (GIS by ARUN KUMAR, P.JAGDISHWAR RAO, RAKESH RANJAN RAHI, SHRI KRISHNA PRASAD; BHEL BHOPAL, India;

16:00 - 18:45

SESSION 39

Room 518bc

B4-4 MULTITERMINAL HVDC

Session Chair: Chandana Karawita

DC Line Fault Clearance and Recovery Schemes for VSC-MTDC System by Xiuda MA, Changjiang ZHAN, Yu LU, Yeyuan XIE; NR Electric Co.;

HVDC Measurement Processing Impact on Reliable Fully Selective Fault Protection by Pedro Miguel Baena Garcia, Geraint Chaffey, Dirk Van Hertem; Etch/EnergyVille/KU Leuven, Belgium;

New Concept for Classic/LCC Multi-Terminal HVDC by ABHAY KUMAR, Jan Wasborg; Hitachi Energy, Sweden;

Power sharing coordinated control for grid-forming MMCs in bipolar HVDC multi-terminal networks by Francisco Javier Cifuentes Garcia, Mudar Abedrabbo, Francesco Giacomo Puricelli, Jef Beerten, Dirk Van Hertem; KU Leuven, Belgium;

Fault Studies and Protection Strategies for Multi-terminal Energy Island HVDC Network by Asif Khan[1], Nikhil Sharma[1], Colin Foote[1], Benjamin Marshall[1], Jose Paracka[2], Richard Poole[2]; [1]The National HVDC Centre, United Kingdom; [2]National Grid Ventures, United Kingdom;

Optimal Power Flow Solver for Multi-Terminal HVDC Grids: Enhancing Stability and Contingency Management by Marco Giuntoli[1], Lena Peter[1], Firew-Z Dejene[2], Ying-Jiang Hafner[2], Neeraj Katiyar[3]; [1]Hitachi Energy Germany; [2]Hitachi Energy Sweden; [3]Hitachi Energy Canada;

Interoperability of an MTDC system considering synchronous Grid-forming control by Taoufik Qoria[1], Carl Barker[2]; [1]GE Vernova, Germany; [2]GE Vernova, United Kingdom;

Towards control, protection and planning for future electrical energy hubs – intermediate outcomes of the DIRECTIONS project by Geraint Chaffey[1,2], Jef Beerten[1,2], Dirk Van Hertem[1,2], Hakan Ergun[1,2], Francesco Giacomo Puricelli[1,2], Giacomo Bastianel[1,2], Merijn Van Deyck[1,2], Abolfazl Mohammadi[1,2], Francisco Javier Cifuentes Garcia[1,2], Jan Kircheis[1,2], Dongyeong Lee[1,2]; [1]KU Leuven; [2]Etch/EnergyVille;

Practical delivery of multivendor, multiterminal HVDC systems; the Project Aquilla experience. by Benjamin Marshall[1], Perry Hofbauer[2], Dong Chen[3], Carl Barker[4]; [1]National HVDC Centre, Scottish Hydro Electric Transmission ltd, United Kingdom; [2]SSE Networks- Transmission, Scottish Hydro Electric Transmission ltd, United Kingdom; [3]National HVDC Centre, Scottish Hydro Electric Transmission ltd, United Kingdom; [4]GE Vernova, United Kingdom.;

16:00 - 18:00

SESSION 40

Room 519b

C1-3 PS1: DEMAND & STORAGE

Session Chairs: Antonio ILICETO
Peter Roddy

Demand Control for the Transmission System Congestion Management by Alexandre Besner, Mihajlo Curcic, Abderrahman Bani, Thierry Major-Cyr; Hydro-Quebec, Canada;

Impact of Data Center Demand on the US Transmission System by Rekha Sharma, Dr. Ankita Samui, Jackson Spaeth; GE Vernova, United States of America;

MESH Concept Application by Watts and Bits procedure by Koichiro Yamaki[1], Yoshimitsu Umahashi[2], Hiroshi Okamoto[3]; [1]Tokyo Electric Power Company Holdings, Inc., Japan; [2]Central Research Institute of Electric Power Industry, Japan; [3]TEPCO Power Grid, Japan;

Long Term electrical Load Forecasting for the Jordanian electrical Power Grid using ANN Models by Ghaith Ahmad Mohmmad Mubark; Samra Electric Power Company (SEPCO), Jordan, Hashemite Kingdom of;

Energy Storage in the big electrical systems: keypoints from the analysis of situation and challenges faced by the major transmission system operators by Claire Lajoie-Mazenc[1], Darren Lamb[2], Jennifer Ross[3], Siju Joseph[4], Alexandre Nohara[5], Stanislas Utts[6], Silvia Ruggiero[7], Gerald Sanchis[8]; [1]Rte, France; [2]CAISO, USA; [3]MISO, USA; [4]NTCSA, South Africa; [5]ONS, Brasil; [6]SO-UPS, Russia; [7]Terna, Italy; [8]GO15, USA;

Importance of risk averse operation of long-term storages when modelling a future renewable northern European electricity system by Birger Mo, Arild Helsteh; SINTEF Energy, Norway;

Increase Transfer Capacity to Remote Areas and Defer Transmission Reinforcement Needs Using Battery Energy Storage Systems by Farzad Farahmand, Farid Chagla, Megan Lund, Alex Merrick; Independent Electricity System Operator, Canada;

Battery Energy Storage Systems for Primary Frequency Regulation: A Pioneering Case in Colombia's National Grid by Oscar Andres Tobar-Rosero[1], Gabriel Jaime Sanchez-Zuluaga[1], Luis Fernando Quintero-Henao[2], John Edwin Candelo-Becerra[1]; [1]Universidad Nacional de Colombia, Colombia; 2Enterprise Innovation;

16:00 - 18:00

SESSION 41

Room 521abc

C4-3 ADVANCED SIMULATION METHODS FOR STABILITY ANALYSIS IN IBR DOMINATED SYSTEMS (PART-2)

Session Chair: Rohitha Jayasinghe
Moderator: Kumara Mudunkotuwa

Frequency-Scanning-based Impedance Models for Multi-IBR Systems by Renan M. Furlaneto[1], Keijo Jacobs[1], Nasim Rashidirad[2], Ahda Pavani[3], Ulas Karaagac[4], Jean Mahseredjian[1]; [1]Polytechnique Montréal; [2]Hydro-Québec Research Institute (IREQ); [3]Federal University of ABC (UFABC); [4]Middle East Technical University;

Numerical impedance-based Stability Analysis of Transmission and Distribution Systems in the Frequency Domain by Thomas Lorenz Würl, Bernd Weise, Flavio Fernandez; DIgSILENT GmbH, Germany;

Stability Assessment of Power Grids with High Penetration of Inverter-Based Resources Using dq Impedance Analysis by Hossein Ashourian[1], Anton Stepanov[1], Henry Gras[1], Jean Mahseredjian[2]; [1]PGSTech, Canada; [2]Polytechnique Montréal;

Small-signal Stability Assessment of Power Systems with Black-Box EMT Models of Inverter Based Resources by Andrew Musgrave[1], Hyeonjung {Tari} Jung[2], Patrick Dalton[2], Weiqing Jiang[2], Fred Howell[1], Jeff Bloemink[1], Xi Lin[1]; [1]Powertech Labs, Canada; [2]Midcontinent Independent System Operator, USA;

A Study on Eigenvalue Comparison between Analytical State-Space Model and Vector fitting Method by Jisoo Kim[1], Jean Mahseredjian[1], Renan M. Furlaneto[1], Alireza Masoom[2], Chul-Hwan Kim[3]; [1]Polytechnique Montréal, Canada; [2]Hydro Quebec, Canada; [3]Sungkyunkwan University, Republic of Korea;

Oscillation Modal Analysis Using Ambient Synchrophasor Measurements for the Italian Grid by Lin Zhu[1], Evangelos Farantatos[1], Yi Zhao[2], Haozong Wang[2], Xinlan Jia[2], Wenpeng Yu[2], Yilu Liu[2,3], Salvatore Tessitore[4], Pietro Pau[4], Guido Coletta[4], Cosimo Pisani[4], Giorgio Giannuzzi[4]; [1]Electric Power Research Institute, United States of America; [2]University of Tennessee at Knoxville, United States of America; [3]Oak Ridge National Laboratory, United States of America; [4]Terna, Italy;

TECHNICAL SESSIONS - TUESDAY, SEPTEMBER 30

16:00 - 18:00

SESSION 42

Room 518a

C5-3 C5 MARKETS & REGULATION TO SUPPORT RELIABLE & RESILIENT POWER SYSTEMS

Session Chair: Scott Joseph Benner

Enhancing Flexibility, Reliability, and Resilience in Brazil by João Mello, Victor Hugo Ribeiro dos Santos; Thymos Energia, Brazil;

Improvement of the Calculation Method for Required Amount of Replacement Reserve for FIT in Japanese Balancing Market by Tatsuma HORI[1], Jun KUKI[1], Kenichi SUGAHARA[1], Joao G. S. FONSECA Jr.[2], Kazuhiko OGIMOTO[2]; [1]Chubu Electric Power Grid Co., Inc., Japan; [2]The University of Tokyo, Japan;

Challenges of Hydropower Due to Climate Change: Case Study on Laos-Thailand Electricity Trade with a Proposal for Solar Integration Model by SUPPAPIT WONGPATTANASIRI, Worrapong WONGLIMAMORNLERT; Electricity Generating Authority of TH, Thailand;

Importance of Regulation on Black-Start Capability to Cater for the Changing Electricity Supply Landscape in South Africa by Lyle Naidoo[1], Siju Joseph[2]; [1]National Transmission Company South Africa (NTCSA), South Africa; [2]Eskom Holdings SOC Ltd., South Africa;

Emergency Preparedness Plan as a Tool for Climate Change Adaptation: A Case Study of the Akosombo Dam Spillage by Kwame Darkwah, Kwaku Wiafe; Volta River Authority, Ghana;

16:00 - 18:00

SESSION 43

Room 520b

C6-7 FLEXIBILITY MANAGEMENT IN DISTRIBUTION SYSTEMS

Session Chair: Bastien Letowski

Preventing Congestion in the Electricity Grid using OpenSTEF and the Power Grid Model by Yu Xiang[1,2], Peter Salemink[1], Frank Kreuwel[1], Jonas van den Bogaard[1], Daniel Marten van Es[1]; [1]Alliander, Netherlands, The; [2]Eindhoven University of Technology, Netherlands, The;

Enhanced Modeling and Simulation of Distribution Feeders with Aggregated DERs by John Jorge Penaranda Velazco[1], Bala Venkatesh[2], Pedro Vasconcelos[2], Fernanda Trindade[3]; [1]Hydro One, Canada; [2]Toronto Metropolitan University, Canada; [3]University of Campinas, Brazil;

Integration of a Hydropower Plant into a Hydro-Québec northern islanded Network in Partnership with the local Community by Jonathan Brisebois, Mario Tremblay, Christian Bouchard, Steeve Beaulieu; Hydro-Quebec, Canada;

Data Center Heat Recovery: A Techno-economic Study in Québec by Erfan Shafiee Roudbari, Ivan Kantor, Oriol Gavaldà, Ursula Eicker; Concordia University, Canada;

Automatic Optimisation of Grid Operations through Demand Flexibility (DF) Programs by Sujata Guruji, Nilesh Kane, Karunakaran B, Salman Khan, Sarvesh Choradia; Tata Power Mumbai, India;

Enabling adoption of offshore wind coupled with Green Hydrogen innovation by Kiran Singh[1], Pankaj SHARMA[2], Y K DIXIT[3], Naveen SRIVASTAVA[4]; [1]POWERGRID, India; [2]POWERGRID, India; [3]POWERGRID, India; [4]POWERGRID, India;

Sector integration including hydrogen, EV, energy hubs, DER by Bhupinder Dhaka, Amandeep Kala; POWER GRID CORPORATION OF INDIA LIMITED, India;

10:30 - 12:15

SESSION 44

Room 520c

A1-5 ASSET MANAGEMENT

Session Chairs: Thomas Hildinger
Arezki Merkhouf

REPLACING DIAMOND COIL STATOR WINDINGS WITH ROEBEL HALF-BAR TYPE ARMATURE WINDINGS TO MITIGATE THE FREQUENT STATOR FAILURES CAUSED BY INTER-TURN FAULTS : NHPC EXPERIENCE by LAKESH KUMAR, ADITYA BHARDWAJ, MOHAMMAD YUSUF, BUDAMA KRISHNA CHAITHANYA; NHPC LIMITED, India;

Stator Windings Neutral Inversion Case Study by Claude Hudon, Remi Taghizad, Gabriel Gosselin, Clément Durochat; DMI Energy, Canada;

The Need for a Classification of Different Kinds of Partial Discharges to Provide Effective Reinvigoration of the Corona Effect Preventive System in Stator Winding Maintenance Process by Jorge Johnny Rocha Echeverria, Mauro Ken Iti Uemori; Transsínio Consultoria Ltda, Brazil;

Assessment of the Stator Insulation System of Synchronous Compensators to Determine the Need for Modernization by Júlio Nascimento, Fernando Brasil; Eletrobras-Eletronorte, Brazil;

Insulation Systems for Motors, Generators and Synchronous Condensers – Contributions to writing Specifications for Services and new Windings. by Fernando Roberto Spezia, Camila dos Santos Gonçalves, Julio Acordi Dorigon; WEG, Brazil;

Enhancing combined cycle power plant Efficiency Through Advanced Fogging Techniques: GE 13E2 gas turbine no.5 in Samra/Jordan as a case study. by Mohammad Farhan Zyoud[1], Iutfi alsharif[2]; [1]Samra Electrical Power Company SEPCo., Jordan, Hashemite Kingdom of; [2]Hussien technical university / Jordan;

Méthode d'atténuation des dangers liés aux éclats d'arc de grande énergie by Kirk Gray, Brouillette Jean; Hydro Quebec, Canada;

10:30 - 12:15

SESSION 45

Room 520f

A2-4 A2 POWER TRANSFORMER & REACTOR: ARCING FAULT CONTAINMENT

Session Chairs: Jean-Bernard Dastous
Samuel Brodeur

Improvement and Strengthening Method for Local Structure of UHV Converter Oil Tank for Defense Against High-Energy Arc Faults by Yikun Zhao, Zongliang Zhang, Peng Li, Ke Wang, Shuqi Zhang; China Electric Power Research Institute China, China, People's Republic of;

Experimental Study on Explosion-Proof Strategy for On-Load Tap Changer by Jiaxi Li[1,2], Ke Wang[1,2], Hongwei Zhang[3], Yikun Zhao[1,2]; [1]China Electric Power Research Institute, China, People's Republic of; [2]National Engineering Research Center of UHV Technology, Haidian District, Beijing 100192, China; [3]China University of Mining & Technology, Beijing;

Mitigation of Fire due to High Energy Internal Arc in Bushing Turrets: Additional New Test Results by Mohamed Ryadi[1], Ewald Werner Taschler[2], Jean-Baptiste Meillier[1], Luc Pauliac[1], Martin Stoessl[2], Hannes Bachkoenig[2]; [1]EDF; [2]Siemens-Energy, Austria;

Research on Pressure Characteristics of HVDC Transfomer Turret on Arc Fault by Licheng Lu, Hongchuan Dong, Juzhen Wu, Yuhang Li; State Grid Economic and Technological Research Institute Co., Ltd., China, People's Republic of;

Arc Fault Detection in Transformers Using Optical Cable Sensors to Reduce the Risk of Explosion by Aref Sharifi[1], Moritz Kuhnke[1], Peter Werle[1], Asghar Akbari[2]; [1]Schering-Institute for High Voltage Engineering and Asset Management Leibniz University of Hannover, Germany; [2]Electrical Engineering Department K.N. Toosi University of Technology, Iran;

10:30 - 12:15

SESSION 46

Room 519a

A3-6 CIRCUIT BREAKER APPLICATION

Long-term measurements of switching transients with VCBs – intelligent data analysis and algorithms by Roberto Schulze[1], Erik Sperling[2]; [1]OMICRON electronics, Germany; [2]OMICRON electronics, Switzerland;

Integration of Digital Technologies in Medium Voltage Switchgears by Sneha Patel[1], Sergio Sevileanu[2], Mohammed Kabir[1], Mohammad Ali Khan[1], Mikhail Rabinovich[3]; [1]Siemens, Canada; [2]Siemens AG; [3]Siemens, USA;

Capacitive Current Switching Test on Vacuum Circuit Breaker and Evaluation of Voltage Factor on the Future Italian 36 kV Network by Francesco Palone, Luca Buono, Gabriele Tresso, Mattia Boiani; Terna Rete Italia, Italy;

420 kV 30 MVAr reactive inductive compensation solutions and type tests in extreme low temperature -50C. by Guilhem Blanchet[1], Sveinung Pettersen[2], Anders Lægreid[1]; [1]Statnett SF, Norway; [2]Equinor;

Development of an Anomaly Detection System for Gas Circuit Breaker by Koma Sato, Tomonori Chikano, Yu Takahara, Katsuhiko Fujioka, Shota Tanaka, Kazuhiro Oda, Daisaku Yamada, Masashi Kitayama; Mitsubishi Electric Corporation, Japan;

A broad return of experience for Power Transformer Energization with Controlled Switching technique, based on more than forty cases. by Alain FANGET; GE Vernova, France;

CIGRE 2025 International Symposium Palais des congrès de Montréal, Canada • September 29 to October 3, 2025

All times are in EST - Eastern Standard Time (Montreal - Canada)

TECHNICAL SESSIONS - WEDNESDAY, OCTOBER 1

10:30 - 13:00

SESSION 47

Plenary Room

B2-8 AI-DRIVEN INSPECTION & MONITORING FOR OVERHEAD TRANSMISSION SYSTEMS

Session Chairs: Janos Toth
François Miralles

AI based Automation in Thermovision scanning of Overhead EHV Lines using Geo fencing technology. by Kapil P. Umak, Vikas M. Bhondve, Dinesh S. Tembe, Vijay Doijadkar, Shivanjali Singh, Riddhiman Chanda; The Tata power Company Limited, India;

Development of AI powered anomaly detection for Power Transmission Towers and Powerlines using Drone captured data by Shunsuke ISHIDA[1], Fumihiko KONDO[1], Yuki MARUME[1], Takaya MASUDA[2], Masahiro OGAWA[2]; [1]Chubu Electric Power Grid Co., Inc, Japan; [2]SENSYN ROBOTICS, Inc.;

Development and use of Artificial Intelligence in the Maintenance of Overhead Lines by Carlos Alexandre Meireles do Nascimento[1], Lucas Souza[1], Alexander Silva[1], Hani YEHIA[2], Giovanni MARTINS[2], Ana GOMES[3], Jhon ERAZO[4], Alexandre ALEIXO[5], Paulo PINTO[6]; [1]Cemig GT, Brazil; [2]UFMG, Brazil; [3]SCCON Geospatial, Brazil; [4]SENAI-SC, Brazil; [5]Imagem, Brazil; [6]Trixel, Brazil;

Computer vision and AI for powergrid automated inspection by Mandana Taleb[1], Stefan GUDMUNDSSON[1], Valentin PHILIPP[2]; [1]RTE, France; [2]Picsellia France;

Detection of Construction Sites Near Infrastructures Using Satellite Technologies by Mandana Taleb[1], Maria Papadomanolaki[2], Alexander Blauw[2]; [1]RTE, France; [2]Orbital Eye, Netherlands;

Artificial Intelligence and Drones for the Inspection and Fault Detection of Transmission Line Component by Abdel Rahman Alheyasat; National Electric Power Company/ Jordan, Jordan, Hashemite Kingdom of;

Mapping Of The Near-Surface Oxidative Pollution From Space Using Machine-Learning Techniques by Mandana Taleb[1], Jean-Christophe PERE[2], Boris GRATADOUX[2], Nabil Jaoudar[1], Sylvain TANGUY[2], Eric LASSERRE[2], Johannes STAUFER[2], Laure CHAUMAT[2], Didier ARNAL-BREZUN[2]; [1]RTE, France; [2]Thales Services Numériques France;

Research on Tree Obstacle Satellite Monitoring Method for Overhead Lines Based on Fusion of Tower Features by Sihang Zhang, Zhi Yang, Kuanjun Zhu, Lixian Zhou, Hui Chen, Junhui Li, Bin Zhao, Chang Liu; State Grid Electric Power Engineering Research Institute, China, People's Republic of;

On the use of IA for accelerated defects detection in the case of UAV transmission tower audit. by Karl Olechnowicz[1], Guillaume Maitre[2]; [1]CIMA+, Canada; [2]University of Namur, Belgique;

10:30 - 12:15

SESSION 48

Room 520e

B3-5 EHV & UHV AC & DC SUBSTATION TOPICS

Session Chairs: John Randolph
Crina-Miana Costan

Development of 1,000 kV Substation Equipment and Technological Advancements in Japan through Demonstration and Verification Test by Yuki ISHIKAWA[1], Masataka SHUGO[1], Shigeyuki TSUKAO[1], Toshiyuki SAIDA[2], Yukiyasu SHIRASAKA[3], Kenji SASAMORI[4], Yoshitake KAI[5]; [1]TEPCO Power Grid, Inc., Japan; [2]Toshiba energy systems & solutions Co.; [3]The Institute of Electrical Engineers of Japan; [4]Mitsubishi Electric Corporation; [5]NGK INSULATORS, LTD.;

"Revolutionizing Substation Monitoring: Design and Development of AI integrated Autonomous Mobile Robot for Power Substation Inspection and Monitoring" by Pradeep Singh Chauhan[1], Anirudha Bhattacharjee[2], Nayan Jyoti Baishya[2], Bishakh Bhattacharya2; [1]Power Grid Corporation of India Ltd. Gurgaon, India; [2]Indian Institute of Technology Kanpur, India;

Challenge of High Ground Potential Rise in Transmission Substations having High Ground Fault Levels and Solving Approach by Aslam Khan; Hydro One Networks Inc., Canada;

Auxiliary Power System Design Approach for HVDC Converter Stations by Frida Ceja Gomez, Daljit Dev; AtkinsRealis, Canada;

Design concepts for compact air insulated substations by Maurizio Albano[1], A. Manu Haddad[1], Muhammad Shaban[2], Mark Waldron2; [1]Cardiff University, United Kingdom; [2]National Grid, United Kingdom;

Seismic qualification of cylindrical electrical equipment in UHV substations by Sheng Li; University of Science and Technology Beijing, China, People's Republic of;

Substation EHV/HV transformer circuit layout optimized for lightning protection by Nkululeko Mazibuko; National Transmission Company South Africa, South Africa;

Predictive Power Flow Simulator for SCADA Systems—A Real-World Implementation by Asim AKHTAR, Hiren GAGNANI, Orion WHEELER, Abdel Rahman KHATIB; Schweitzer Engineering Laboratories, Inc., United States of America;

Off-Load Bus Splitter arrangement in 400 kV Double Main Bus Bar Scheme to mitigate complete disruption of power supply during breakdown/repair by Brijesh YADAV, Arti YADAV, Kuleshwar SAHU, A.K. DIXIT; Power Grid Corporation of India Ltd., India;

10:30 - 12:15

SESSION 49

Room 518bc

B4-5 MESHED AC/DC SYSTEMS

Session Chair: Afshin Pashaei

Generalized AC/DC Power Flow Methodology including Opportunities offered by Converters by Lee Raiyan bin Zulkifli[1], Josep Fanals i Batllori[1], Titouan Delorme[1], Santiago Peñate-Vera[1], Oriol Gomis Bellmunt[2]; [1]eRoots Analytics, Spain; [2]CITCEA-UPC, Spain;

Control and Operation of Parallel Interconnection of HVDC and HVAC Systems by Omar Fadhel Jasim[1], Taoufik Qoria[2], Farheen Chishti[3], Fatima Amara[1], Ameen Fayaz[1], Senthooran Balasubramaniam[1], Priyanka Mishra[3]; [1]GE Vernova, United Kingdom; [2]GE Vernova, Germany; [3]GE Vernova, India;

Resilience-Oriented Evaluation of Static Var Compensators in Hybrid AC-HVDC Power Systems by Mohammad Ghanbari[1], Mohsen Zadeh[1], Sina Driss[1], Fatemeh Ahmadi-Gorjayi[2]; [1]Jacobs Engineering Group, Canada; [2]Jacobs Solutions, United States;

Modeling dispatch scenarios of an embedded HVDC link using historical NYISO data by Mohtarima Begum Medha[1], Luigi Vanfretti[1], Supriya S. Tawde[2], Jason Frasier[2], Pradip Kumar[2]; [1]Rensselaer Polytechnic Institute, United States of America; [2]New York Independent System Operator (NYISO);

Frequency Stability in Hybrid AC/DC Transmission Systems: Evaluation of Grid Forming and Grid Following Converter Controls with DC Momentary Reserves by Siyuan Li, Florian Freidinger, Aaron Hebing, Lukas Jung, Xiong Xiao, Jutta Hanson; Technical University of Darmstadt, Germany;

Enhancing Grid Stability: The Role and Design of Static Frequency Converters in the Kühtai 2 Variable Speed Pumped Storage Power Plant by Alexandre Christe[1], Tobias Thurnherr[1], Christoph Haederli[1], Steve Aubert[1], Wolfgang Kofler[2], Andreas Hammer[2]; [1]Hitachi Energy Ltd, Switzerland; [2]TIWAG Tiroler Wasserkraft AG;

10:30 - 12:15

SESSION 50

Room 519b

C1-4 PS1: CONGESTION, CURTAILMENT, RELIABILITY, ADEQUACY & UNCERTAINTY

Session Chairs: Antonio ILICETO
Peter Roddy

Analysis of the Impact of Curative Congestion Management Measures on System Stability by Fabian Meissner, Ricarda Kriete, Stefanie Samaan, Albert Moser; RWTH Aachen University, Germany;

Energy Curtailment Analysis in Alberta by ASHRAF UL HAQUE[1], ASHIKUR BHUIYA[2], HABIB MASUM[1]; [1]Stantec Consulting Ltd., Canada; [2]ARUP, Canada;

Weather Synchronizations - The key Consideration for System Simulation and Reliability Assessment by Ming Hu; AESO, Canada;

Power System Reliability Models and the Characterization of Equipment Outage Durations by Razib Hasan[1], Selena Lee[1], JinMing Liu[1], Partha Roy[1], Thomas Fredeman[1], David Allen[2]; [1]Consolidated Edison Co. of NY, United States of America; [2]Risk Research Group, USA;

Strathclyde European Electricity Market Model: a 14-Zone disaggregated GB model for adequacy and cost assessment of future decarbonisation pathways by Shanay Skellern, Callum MacIver, Magnus Jamieson, Keith Bell; University of Strathclyde, United Kingdom;

Adaptive Power System planning for integration of new Technologies by Frederik J van der Linde[1], Muath Akkad[1], Stefan Kovacevic[1], Sultana Begum[2], Kate Young[1]; [1]Jacobs, United Kingdom; [2]Jacobs, UAE;

10:30 - 12:15

SESSION 51

Room 521abc

C4-4 ADVANCED SIMULATION MODELS FOR ANALYSIS OF IBR DOMINATED SYSTEMS

Session Chair: Udaya Annakkage
Moderator: Henry GRAS

A Data-Driven Aggregated Model of IBR-based Networks for EMT Simulations; Accuracy and Performance Analysis by ABOUBACAR ABDOU DANGO[1], INNOCENT KAMWA[1], HIMANSHU GROVER[1], ALI HAJEBRAHIMI[2], ALIREZA MASOOM[2], NASIM RASHIDIRAD[2]; [1]Laval university, Canada; [2]Institut de recherche de Hydro-Québec, Canada;

Detailed Circuit-Based Model of Switched Reluctance Motor Drive System for Electromagnetic Transient Studies by Seyedarmin Mirnikjoo[1], Mohammed Naidjate[1], Jean Mahseredjian[1], Nicolas Bracikowski[2], Paul Akiki[3]; [1]Polytechnique Montreal, Canada; [2]IREENA Laboratory of Nantes University; [3]EDF-R&D, Électricité de France;

Research on Transient Characteristics of 300MVar Air-cooled Cylindrical Rotor Synchronous Condenser by Guifen Li[1], Xu Ge[1], Zhiqiang Li[2], Yutian Sun[1]; [1]Harbin Electric Machinary Company Limited, China, People's Republic of; [2]China Electric Power Research Institute Company Limited, China, People's Republic of;

On the Effect of Tap Changers on Voltage Stability with Polynomial Loads by Andrea Zanelli[1], Dirk Schmidt[1], Matthias Resch[1], Marco Giovanelli[1], Martin Geidl[1], Walter Sattinger[2]; [1]University of Applied Sciences Northwestern Switzerland, Switzerland; 2Swissgrid Inc.;

Impact of IBR Equivalent Negative Sequence Impedance on Overvoltages on Healthy Phases during Faults by Cassandre Sarrazin, Julie Lacroix; Hydro-Québec, Canada;

Leveraging specialized utility testing facilities for rigorous evaluation and de-risking of PMU solutions: two comprehensive case studies by Sagnik Basumallik[1], Reza Pourramezan[1], Alex Ludewig[1], Neeraj Nayak[2], Hossein Hooshyar[1]; [1]New York Power Authority, United States of America; [2]Electric Power Group;

TECHNICAL SESSIONS - WEDNESDAY, OCTOBER 1

10:30 - 12:15

SESSION 52

Room 518a

C5-4 C5 FLEXIBILITY INTEGRATION INTO ELECTRICITY MARKETS

Session Chair: Pradip Ganesan Kumar

Independent Power Supply: Balancing Self-Consumption and Grid Connection – A New Challenge for Emerging Renewable Energy in Thailand's Energy Landscape by NOPPADOL CHUANCHAIYAKUL; Electricity Generating Authority of Thailand, Thailand;

Demand Response Impact on the South African Network by Hinesh Madhoo[1], Sipho Mdhlulli[2], Sharon Makopo[2], Darryl Chapman[1]; [1]Eskom, South Africa; [2]CSIR, South Africa;

Demand Response (DR) as a key enabler for System Flexibility in power systems with high VRE resources by Matome Malematja, Siju Joseph; National Transmission Company South Africa SOC Ltd, South Africa;

Accelerating the Uptake of Electric Vehicles in the Logistics Industry by Contributing to the Power Grid by HAJAR ABDOLAHINIA, Innocent Kamwa, Abbas Rabiee; Laval university, Canada;

Integrating Electric Vehicles to the Power Grid: A Proposed Framework by Jovanio Santos, Dorel Ramos; University of Sao Paulo;

13:30 - 15:30

SESSION 53

Room 520c

A1-6 ASSET MANAGEMENT

Session Chairs: Arezki Merkhouf
Thomas Hildinger

STRATEGIC PLANNING & CHALLENGES FOR INSTALLATION OF GENERATOR CIRCUIT BREAKERS (GCBs) TO IMPROVE PROTECTION OF THE GENERATING UNIT, BY CLEARING POTENTIAL HARMFUL SHORT-CIRCUIT FAULTS IN THE HYDRO POWER STATIONS by SUPRAKASH ADHIKARI, NIRAJ KUMAR SINGH, MITESH KUMAR, ALOK YADAV; NHPC LIMITED, India;

Design And Analysis of New Bladeless Vortex Wind Turbine by Payam Alemi, Mahdi Zavvar, Alireza Khosroshahi; Hatch, Canada;

Dynamic State Estimation of Doubly Fed Induction Generator based on Robust Particle Filtering by Shahabodin Afrasiabi[1], Sarah Allahmoradi[2]; [1]Power System Consultant (PSC), Canada; [2]FortisAlberta Inc., Canada;

CMS support in preventive maintenance actions to extend the useful life of direct drive turbine main bearings by Emerson Lima do Nascimento[1], Rafael Rosar Matos[1], Tiago Kaoru Matsuo[1], Emerson Ancini[1], Douglas Brandão[2]; [1]AQTech Power Prognostics, Brazil; [2]CEMIG;

Case study: supporting the maintenance management of wind turbine fleets with gearbox defect patterns using condition monitoring systems by Emerson Lima do Nascimento[1], Rafael Rosar Matos[1], Emerson Ancnini[1], Tiago Kaoru Matsuo[1], Ermerson Lima[2]; [1]AQTech Power Prognostics, Brazil; [2]CGN Brazil Energy, Brazil;

Practical Applications of Electrical and Current Signature Analysis in DFIG Wind Generator and Powertrain Reliability Evaluation by Howard W Penrose; MotorDoc LLC, United States of America;

Digital twin model for predicting the energy generation from the wind turbine by Donya Azhand, Faramarz Ghelichi, Safdar Mahdavi Majd, peyman alimohammadi; Monenco Iran, Iran, Islamic Republic of;

13:30 - 15:30

SESSION 54

Room 520f

A2-5 A2 POWER TRANSFORMER & REACTOR: MATERIALS & ENVIRONMENT

Session Chair: Zhongdong Wang

The Role of Nitrogen Additives and Meta-Aramid Fibres in Water Migration for Optimized Transformer Operation by Oscar H. Arroyo-Fernandez, Patrick Picher, Mariela Rodriguez, Brigitte Morin; Hydro-Québec, Canada;

Determination of Low Molecular Weight Acids in Power Transformer Mineral Oil by Esperanza Mariela Rodriguez Celis, Brigitte Morin, Oscar Henry Arroyo Fernandez, Patrick Picher; Hydro-Quebec, Canada;

Explore The Use Of Synthetic Ester In Transformers Beyond Fire and Environmental Safety Benefits by Jinesh Malde[1], Jonathan Brenton[2], Brett Belbin[2], Anthony Alan Coker[1]; [1]Shell; [2]Newfoundland Power;

Carbon Footprint Analysis of Various Insulating Fluids used in Power Transformers by Christophe ELLEAU, Lea QUILLARD, Lamine COULIBALY; EDF Electricité de France, France;

Study on Thermal Expansion Characteristics and Limit Values of Dry-type Bushings for 750 kV Transformers under Extreme Environments by Gaoyi Shang[1], Wanhao Shi[1], Dingqian Yang[2], Xuandong Liu[1]; [1]Xi'an Jiaotong University, China; [2]State Grid Xinjiang Electric Power Research Institute, China;

On Load Tapchangers for low temperature and harsh environmental applications by Onkar C Kolambkar, Pranav Shanker, X Leo Sushil; CTR Manufacturing Industries Private Limited, India;

Standard Approach Towards Power Transformers' Sustainability through a Joint Industrial Project by MOHAMMAD REZA SHAH MOHAMMADI[1], Christina IOSIFIDOU[2], Yiri Massop[1]; [1]dnv; [2]Siemens Energy;

13:30 - 15:30

SESSION 55

Room 519a

A3-7 INSTRUMENT TRANSFORMERS

Session Chair: Paolo Mazza

Low-Power Instrument Transformers for Control, Protection and Metering Applications by Valeri Oganezov[1], Lukas Cesky[2], Vaclav Prokop[2]; [1]ABB Inc,, Canada; [2]ABB s.r.o., Czech Republic;

Optical Current Transformers: Bridging Measurement Accuracy and Predictive Maintenance by Carlos Dutra[1], Luan Tominaga[1], Jurandir Oliveira[1], Vitor Woyakewicz[2], Sergio Zimath[2], Tiago Matsuo[2], Luciano Freitas[3], Rubens Nascimento[3]; [1]PowerOpticks, Brazil; [2]AQTech, Brazil; [3]ENGIE, Brazil;

New test and commissioning tools and concepts for low power instrument transformer by Peter Menke[2], Franz Gatzen[3], Patrick Ganser[2], Federico Canas[3], Max Burow[2], Jörg Blumschein[3], Antoni Furlani Rosa[1], Lucas Varela[1], Thomas Neumeier[3]; [1]SecuControl Inc, United States of America; [2]Siemens Energy Germany; [3]Siemens AG Germany;

Test voltage investigations on wide-bandwidth accuracy behaviour of medium voltage LPVTs using sweep frequency response analysis by Thomas Bischof[1], Lukas Cesky[2], Erik Sperling[3], Danish Baig[4], Bretislav Sevcik[2]; [1]OMICRON electronics GmbH, Austria; [2]ABB s.r.o, Czech Republic; [3]OMICRON, Switzerland; [4]ABB, Canada;

Recommendations for the Low – Power Passive Instrument Transformers testing by Lukas Cesky[1], Ryan Elo[2], Mirza Danish Baig[3], Karol Majer[2], Martin Celko[2], Vaclav Prokop[2], Victor Villanueva[4]; [1]ABB, Brno, Czech Republic; [2]OMICRON electronics Corp., USA; [3]ABB Inc., Canada; [4]ABB Inc., USA;

Development and Testing of a 110 kV 10000 pF Dry Type Capacitive Voltage Transformer (CVT) by Robert Leonard Middleton, Eric Euvrard, Haizhen Wang; RHM International;

Frequency-Dependent Validation of an Electromagnetic Control-Oriented Current Transformer Model by Nicolai Schwartze[1,2], Dennis Albert[1], Sonja Moschik[1], Markus Reichhartinger[2]; [1]OMICRON electronics GmbH, Austria; [2]Graz University of Technology, Austria;

Development of an optimised Fibre Optics Sensor for Laboratory and Substation non-invasive Calibration of Current Transformers by Gabriella CROTTI[1], Palma Sara LETIZIA[1], Alf-Peter ELG[2], Guglielmo FRIGO[3], Jari HÄLLSTRÖM[4], Paolo MAZZA[5], Burak AYHAN[6], Hüseyin ÇAYCI[6], Mikael LINDGREN[2]; [1]INRIM Istituto Nazionale di Ricerca Metrologica; [2]RISE Research Institutes of Sweden AB; [3]METAS Federal Institute of Metrology; [4]VTT Technical Research Centre of Finland Ltd; [5]RSE Ricerca Sistema Energetico; [6]TUBITAK The Scientific and Technological Research Council of Türkiye;

13:30 - 15:30

SESSION 56

Plenary Room

B2-9 HTLS CONDUCTOR & SMART INSTALLATION FOR GRID RESILIENCE

Session Chairs: Kjell Halsan
Vivek Chari

Development of new equipment to install Aircraft Warning Markers in overhead lines by Carlos Alexandre Do Nascimento[1], Lucas Souza[1], Guilherme Neves[1], Daniel Silva[1], Allan Gomes[2], Danilo Malleta[3], Albert Santos[4], Pedro Menezes[4], Alexandre Bracarense[4], Daiane GUIMARAES[5], Luiz JUNIOR[4], Carlos SOUSA[2]; [1]Cemig GT and Cigre Brasil, Brazil; [2]Cemig D, Brazil; [3]Grupo ICTS, Brazil; [4]MB Wellworks, Brazil; [5]Berkan;

A new method to carry out the thermal cycling test on splice connectors of overhead lines by Meysam Hassanipour, Sylvain Canuel, Simon PRUD'HOMME; Hydroquebec, Canada;

Predictive Modelling of Zinc Coating Corrosion in ACSR Conductors Integrating Environmental Exposures by Shaoqi Yang[1], Luc Chouinard[1], Meysam Hassanipour[2]; [1]McGill University, Canada; [2]L'Institut de recherche d'Hydro-Québec, Canada;

LineCore Technology to Detect Corrosion in ACSR Overhead Line Conductors by Gilles Rousseau[1], Simon Francoeur[2], Francis Boudreault-Leclerc[2], Nicolas Pouliot[1]; [1]Hydro-Québec, Canada; [2]Nucleom, Canada;

From Single to Multistrand Carbon Core Conductors: A Deep Dive into the Advanced PMC HTLS Conductors by Antti Hassinen[1], Luca Mora[2], Davide Peroni[2], Debora Mimo[2], Sami Pirinen[1], Heini Kloster[1]; [1]Exel Composites, Finland; [2]De Angeli Prodotti, Italy;

Grid enhancing Technologies: advanced Conductor Design Considerations by Kailey Marissa Cole; POWER Engineers, Inc., Canada;

The evolution of design and industrial standards: the Italian experience on stranded core polymeric matrix composite HTLS conductors by Marco Di Vaio, Piero Berardi, Daniele Cortese, Raffaele Costagliola, Enrico Di Vito, Mauro Gambassi, Gregorio Greco, Alberto Piccinin; TERNA, Italy;

Increasing Grid Capacity with Giga-Strength Steel by Daniel Berkowitz; Bekaert, United States of America;

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TECHNICAL SESSIONS - WEDNESDAY, OCTOBER 1

13:30 - 15:30

SESSION 57

Room 520e

B3-6 EHV & UFV AC & DC SUBSTATION TOPICS

Session Chairs: John Randolph
Crina-Miana Costan

Theoretical Analysis of Corona-Induced High-Frequency Interference Caused by 315 kV Substations Located in the Vicinity of an Airport by Marc-André Joyal, Olivier Turcotte, Martin Edgar Cormier; Hydro-Québec, Canada;

DG Set Replacement with BESS by Ravi Kumar Sahu, Vikas Balkrishna GAWALI, Ganesh Tawre; TATA Power Co. Ltd, India;

13:30 - 15:00

SESSION 58

Room 522a

EHV & UHV: OPERATION & MAINTENANCE OF EHV EQUIPMENT

Session Chair: Stefan Tenbohlen

Advancements in Power System through Onsite repair Techniques of Power Transformer and Reactors: Reducing Downtime and Costs by ALOK KUMAR[1], MADHAN KUMAR SUBRAMANI[2], PANKAJ SHARMA[1], YUGESH KUMAR DIXIT[1]; [1]Power Grid Corporation of India Ltd., India; [2]BHEL;

Vibro-acoustic Mechanism and Characteristics of Converter Transformer Windings under Valve-Side DC Bias by Xiaolin Zhao, Yuwei Zhong, Peng Li, Shuqi Zhang, Ke Wang, Huiwen He; China Electric Power Research Institute, China, People's Republic of;

Increased cable availability through online assessment by Christoph Steiner[1], Iaroslav Shevchenko[1], Muhammad Arif[3], Denis Tsvetkov[2], Mikhail Babenkov[2], Peter Birkholz[3], Ekatarina Podolska[2], Uwe Kaltenborn[1], Thomas Steiner[1]; [1]HIGHVOLT Prüftechnik Dresden GmbH, Germany; [2]Polycentrum S Solutions SL,Spain; [3]Technische Universität Dresden, Germany;

Research on Oil-immersed Reactive Power Compensation Device for UHV AC Project in High-altitude Areas by Yan Du, Jiangbo Chen, Minfeng Shao, Hui Li; CEPRI, China, People's Republic of;

Analysis of Disconnection Fault on a 1000KV UHV Line by Hui Liu[1], Jun Yong[2], Chao Zhou[1], Rong Liu[1], Ran Jia[1]; [1]State Grid Shandong Electric Power Research Institute, China, People's Republic of; [2]State Grid Shandong Electric Power Company, China, People's Republic of;

Maintenance Experiences for UHV overhead lines in Japan by Tomoaki KAWAMURA, Shohei TAKAHASHI, Keigo TANAKA, Noriyuki TAKADA, Yoichi TSUCHIDA, Tomonori SHIRAISHI; TEPCO Power Grid, Inc., Japan;

13:30 - 15:30

SESSION 59

Room 518bc

B4-6 FACTS - APPLICATION, DESIGN, CONTROL & PERFORMANCE

Session Chair: Hiranya Suriyaarachchi

Riverton STATCOM: Grid-Forming Controls for a Robust Solution Under Changing System Conditions by Christian Winter[1], Jessica Marshik[1], Heinrich Von Geymueller[2], Mateusz Gietz[2], Joanne Hu[3], Bruno Bisewski[3]; [1]Minnesota Power, United States of America; [2]Siemens Energy, Germany; [3]RBJ Engineering, Canada;

First Hybrid STATCOM Reactive Compensator on Hydro-Québec 735 kV Transmission System. Design, EMT Studies and Special Control Features. by Marc-Antoine Légaré[1], Dany Fortin[1], Mohamad Alawie[1], Georg Pilz[2], Lukas Friess[2], Daniel Paul[2], Colin Clark[3]; [1]Hydro-Québec, Canada; [2]Siemens Energy, Germany; [3]Siemens Energy, Canada;

Engineering Experience of MMC based Static Synchronous Condenser (MMC-SSC) with Grid Forming Capability by Nannan Wang, Rundong Lv, Chong Wang, Shunke Sui, Xiuda Ma; NR Electric Co., Ltd., China, People's Republic of;

A new STATCOM topology equipped with short-time energy storage and Grid Forming control for HV network voltage and frequency regulation by Gianluca Postiglione, Massimiliano Andreotti, Moreno Ripamonti, Claudio Finotti, Giovanni Borghetti, Oriol Gomis, Eduardo Prieto, Vinicius Albenraz Lacerda; Nidec Conversion, Italy;

Genetically Optimised Feedback Linearizing Control for STATCOM by Boniface CHIA[1], Stella MORRIS[2], P.K. Dash[3]; [1]Sarawak Energy Berhad, Malaysia; [2]University Tunku Abdul Rahman; [3]Siksha "O" Anusandhan University;

Application of STATCOM as a countermeasure for increasing the number of Switchgear openings and closings for the Reactive Power Supplier in the Hida-Shinano FC by Yuji Aihara, Shigenori Kakuno, Masahito Kaneko, Masanori Takechi; TEPCO Power Grid, Inc., Japan;

Improved STATCOM Ride-Through Performance in presence of GIC by Ardavan Mohammadhassani[1], Mark McVey[1], Zhibo Wang[2], Sugiyama Hironori[3], Seo Hiroki[3]; [1]Dominion Energy, United States of America; [2]MEPPI, United States of America; [3]MELCO, Japan;

Analytical Modelling and Measurement of Magnetic Flux in SVC Installations: A Case Study from Konjsko Substation by Ante Soldo[1], Silvestar Šesnić[2], Tonko Garma[2], Boris Avramović[1]; [1]The independent Transmission System Operator in Croatia, Croatia (HOPS); [2]University of Split, Croatia (FESB);

13:30 - 15:30

SESSION 60

Room 520b

B5-1 FAULT LOCATION, AUTORECLOSING, CONTROLLED SWITCHING, WIDE-AREA MEASUREMENTS

Session Chairs: Bogdan Kasztenny
Farnoosh Rahmatian

Fault location for three-ended and mixed lines using synchronized measurements by Michael Kockott[1], OD Naidu[2], Neethu George[2], Sinisa Zubić[3]; [1]Hitachi Energy, United States of America; [2]Hitachi Energy, India; [3]Hitachi Energy, Sweden;

Implementation of a Scalable Multi-Breaker Synchronization Scheme for Switching Stations in SaskPower by Ashutosh SINGH[1], Murtuza RUPAWALA[1], Tyson MAIER[2], Elemer DEMETER[2]; [1]siemens canada limited, Canada; [2]Saskatchewan Power Corporation, Canada;

Synchronised Data enabled detection and localisation of high impedance earth faults. by HUGH BORLAND[1], Tony Yip[2], Jan Zurowski[3]; [1]Applied IQ, Ireland; [2]Applied IQ, UK; [3]Applied IQ, Poland;

Use of Most Advanced Controlled Switching Techniques to Mitigate the Widespread Regional Impacts of a Power Transformer's Energizations by Vincent Balvet[1], Leon Koricki[2], Janko Blatnik[3]; [1]VIZIMAX Inc., Canada; [2]ELES, d.o.o., Slovenia; [3]VIZIMAX Inc., Slovenia;

Advancing Wide Area Measurement Systems: Insights from Global Applications and Industry Trends by Liling Huang, Mark Adamiak; George Mason University, United States of America;

13:30 - 15:30

SESSION 61

Room 519b

C1-5 PS1/2: HYDROGEN, HEAT, MULTI-ENERGY SYSTEMS & PLANNING

Session Chairs: Antonio ILICETO
Peter Roddy

Global sustainable energy system coupling electricity and hydrogen by Nicolas Chamollet[1], Duncan Mathews[2], Raul Montano[3], Ling Wei[4]; [1]EDF, France; [2]University College Cork; [3]Hitachi Energy; [4]Electric Power Development Research Institute;

Hydrogen Production from Thermal Electricity Constraint management by Charlotte Higgins[1], Jacob Kane[1], Paul Wakely[2], Helen Dugdale[3], Hanna Lawrence[1], Adrian Anderson[1]; [1]Arup, United Kingdom; [2]National Energy System Operator (NESO), United Kingdom; [3]National Gas, United Kingdom;

Economic Evaluation of energy-flexible Heating and Holding Phases of Melting Furnaces by Alexander Mages[1,2], Alexander Sauer[1,2]; [1]Institute for Energy Efficiency in Production (EEP) University of Stuttgart, Germany; [2]Fraunhofer IPA, Germany;

Quantifying the Industrial Heat Electrification Potential for Grid Planning by Francis LEBREUX DESILETS, Soseh ZADOORIAN, Matheus ZAMBRONI, Steven WONG; NRCAN;

Investigation of the Influence of Energy policy framework conditions on the Development of Municipal Multi-energy systems by Paul Maximilian Röhrig[1,2], Leon Zoller[1], Oliver Banovic[1], Julius Zocher[2], Andreas Ulbig[1,2]; [1]RWTH Aachen, IAEW, Aachen, Germany; [2]Fraunhofer FIT, Aachen, Germany;

Railway Multi-Energy Hub for a Resilient Integrated Energy System by JAMES YU, Ross Davison, Brian Sweeney, Kang Li, Ross Kirkwood, Colin McNaught, Pingz Qian; SP Energy Networks, United Kingdom;

Strategic planning of network expansion by considering different constraints and factors by Stefano Grassi; Gilytics AG, Switzerland;

Enhancing Grid Utilization: A Case Study on Dynamic Line Rating and Advanced Power Flow Control for Long Term Planning by Swaroop Guggilam, Alberto Del Rosso; EPRI, United States of America;

13:30 - 15:30

SESSION 62

Room 520ad

C2-1 ADVANCED CONTROL, OPTIMIZATION, & RESILIENCE IN MODERN POWER SYSTEMS

Session Chair: Trevor Dewitt Hines

Robust Model Predictive Control for Fast Frequency Control in Low-Inertia Grids Using Box-Jenkins Identified Models of Grid-Forming Inverters by Masood Mottaghizadeh, Innocent Kamwa, Abbas Rabiee, Seyed Masoud Mohseni-Bonab, Navid Vafamand; Laval University, Canada;

Quantifying Inertia Contributions of Inverter-Based Resources: Method Comparisons and GFM vs GFL by Poria Astero; Electric Power Engineers (EPE), United States of America;

Advanced use of Battery Energy Storage System in the scope of SINCRO.GRID – the EU role model smart grid project by ERVIN PLANINC, TOMAZ TOMSIC, DARKO KRAMAR, JURIJ KLANCNIK; ELES, d.o.o., Slovenia;

Cyber-Attack-Induced False Load Data Recovery with Dynamically Constrained Go Decomposition for Unit Commitment by Qingqiu Liu, Yuxiong Huang, Gengfeng Li, Hongrui Lu, Chenwei Gao, Zhengkun Xin; Xi'an Jiaotong University, China, People's Republic of;

Mixed-Integer Second-Order Cone Programming for Multi-Period Scheduling of Flexible AC Transmission System Devices by Mohamad Charara[1], Martin De Montigny[2], Nivine Abou Daher[2], Hanane Dagdougui[1], Antoine Lesage-Landry[1]; [1]polytechnique Montréal, Canada; [2]Hydro-Québec, Canada;

Data-Driven MPC of Secondary Load Frequency and Voltage of Power Systems by Navid Vafamand, Himanshu Grover, Innocent Kamwa, Abbas Rabiee; Laval University, Canada;

Impact Analysis of a Capacitive Ladder Fully Electronic Voltage Regulator on the IEEE 39-Bus System Under Fault Conditions by Abolfazl Babaei[1], Waldemar Ziomek[2], Ani Gole[1]; [1]RMS Energy; [2]PTI Transformers LP;

TECHNICAL SESSIONS - WEDNESDAY, OCTOBER 1

13:30 - 15:30

SESSION 63

Room 521abc

C4-5 ADVANCED STABILITY SUPPORT CAPABILITIES FOR IBR DOMINATED SYSTEMS

Session Chair: Yannick VERNAY
Moderator: David Jacobson

New classification of converter-driven stability phenomena and risk assessment methods by Gilles Chaspierre[1], Georgios Misyris[2]; [1]ELIA GRID INTERNATIONAL, Belgium; [2]ELIA GRID INTERNATIONAL, Germany;

Assessment of Transient Stability in the IEEE 39-Bus System with Variable Levels of Grid-Forming Inverters Integration by Jose H. Vivas Nava[1], Nayeem Ninad[2], Luc-Andre Gregoire[1]; [1]OPAL-RT technologies, Canada; [2]Natural Resources Canada, Canada;

Impact of BESS grid-forming in Power Grids highly dominated by IBRs by Camilo Ordonez[1], Xiaolin Wang[2]; [1]Huawei LATAM Digital Power; [2]Huawei Canada - Montreal Smart Grid Technology Lab;

Stability Enhancement in Weak Grids with High Renewable Penetration: Synchronous Condenser vs. Converter-based Technologies by Rasool Heydari[1], Prabhat Ranjan Bana[1], Jean-Philipp Hasler[1], Anders Bostrom[2], Mikael Halonen[1]; [1]Hitachi Energy, Sweden; [2]Hitachi Energy, US;

Comparative Analysis of Virtual Impedance and Current Saturation Methods for IBR Fault Current Limiting Against IEEE 2800 Requirements by Xinquan Chen[2], Ilhan Kocar[1], Aboutaleb Haddadi[3], Evangelos Farantatos[3]; [1]Polytechnique Montreal, Canada; [2]The Hong Kong Polytechnic University; [3]EPRI;

Enhancing Grid-Forming Converter Dynamics with a DFT-Based Phase-Locked Loop by Kumara Mudunkotuwa, Garth Irwin, Andrew Isaacs; Electranix Corporation, Canada;

Transient stability enhancement using converter-interfaced synchronous condenser at LCC-HVdc terminals by Narges Zarean Shahraki[1], Aniruddha M. Gole[1], Mojtaba Mohaddes[2], Chandana Karawita[2]; [1]University of Manitoba, Canada; [2]TransGrid solutions Inc., Canada;

13:30 - 15:30

SESSION 64

Room 518a

C5-5 C5 WHOLESALE MARKET SETTLEMENT & PRICING

Session Chairs: Anthony Michael Giacomoni

Bidding zones as an instrument for setting regional price incentives for the capacity allocation of flexible consumers in the transmission grid by Lukas Hein, Marbod Helmut Markus Kollnig, Albert Moser; RWTH Aachen University, Germany;

How potential grid investments can decrease price spreads in the European Single Day-Ahead Flow-Based Market Coupling by Ferenc Nagy[1], Melinda Dr. Nagy[1], Luca Tóth[1], Ákos Arnold[1], Dávid Rostoványi[1], Zsolt Lengyel[1], Tamás Dr. Decsi[1], Péter Szajkó[2]; [1]MAVIR Ltd., Hungary; [2]M-IT Services LLC., Hungary;

Energy Storage Opportunity Cost Guidance for System Operators by Scott Joseph Benner; PJM Interconnection, LLC, United States of America;

Enhancing deliverability of reserves through market price signals by Pradip Ganesan Kumar, Matthew Musto, Kanchan Upadhyay; NYISO, United States of America;

Influence of Forecast Errors on the Market-Based Allocation of Cross-Zonal Capacity for the Exchange of Balancing Capacity by Claire Maria Adriana Lambriex, Lukas Pfeiler, Albert Moser; RWTH Aachen University, Germany;

Colombia's evolving electricity market by ALVARO CASTRO, DIANA PEREZ; XM S.A. E.S.P, Colombia;

16:00 - 18:00

SESSION 65

Room 520f

A2-6 POWER TRANSFORMER & REACTOR: MONITORING, TESTING & DIAGNOSTICS

Session Chairs: Edward Gerald teNyenhuis

Mitigation and Electromagnetic Transient (EMT) Analysis for Dissolved Gas in a 500 kV/16 kV Generator Step-Up (GSU) Transformer by Bruce Chen, Hyunjung Yong, Wenli Hong, Masoud Ali, Ska-Hiish Manuel, Anil Pradhan, Edward Burt; BC Hydro, Canada;

Insights in Condition Assessment of Power Transformers Using SOT and DGA Data for End-of-Life Estimation by Ahmad Vosoughi Hamzekhanlo[1], Stefan Kornhuber[1], Sebastian Kleyboldt[2], Mahmoud Moh'd[2]; [1]University of Applied Science Zittau/Görlitz , Germany; [2]50Hertz Transmission GmbH;

Determining Abnormal Behaviour of Loaded Tap Changers using a DGA 4-simplex. by Zachary Draper, James Dukarm, Sanskruti Padmawar; Delta-X Research, Canada;

Software for applying the DGA interpretation method of CIGRE TB 771 using gas limits specific for each type of fault by Michel Duval[1], Nelly Sénéchal[1], Luc Paulhiac[2], Jerzy Buchacz[3], Patrick Picher[1], Sébastien Favron[1], Marta Cea de Ruano[1], Stéphane Proulx[1]; [1]Hydro Québec, Canada; [2]EDF, France; [3]Electropomiar Elektryka, Poland;

Evaluation of Water Content in Solid Insulation Using Online Monitor Data by Senja Maria Leivo; Vaisala Oyj, Finland;

Partial Discharge Based Root Cause Analysis for a 33 kV Cast Resin Transformer by Raul Alvarez[1], Rodolfo García-Colon[2], Mihai Huzmezan[3]; [1]University of La Plata, Argentine Republic; [2]Megger; [3]Megger;

Impact of Accelerated Thermal Aging on Power Transformer Insulation: An FRA-Based Assessment by Avinash Srikanta Murthy[1], Genaro Andrew-Morlet[2], Zhanyue Wen2, Saravanan Selvaraj[1]; [1]Hitachi Energy India Limited, India; [2]Hitachi Energy Germany AG, Germany;

Analysis of on-line vibroacoustic monitoring of On-Load Tap Changers in Power Transformers by Joachim Schiessling[1], Nilanga Abeywickrama[1], Michel Gauvin[2], Patrick Picher[2]; [1]Hitachi Energy Research, Sweden; [2]Hydro-Québec, Canada;

16:00 - 18:00

SESSION 66

Plenary Room

B2-10 ADVANCES IN INSULATOR DESIGN & DIAGNOSTICS FOR HIGH VOLTAGE TRANSMISSION - PART 2

Session Chairs: Herbert Lugschitz
Peter Sidenvall

Optimizing Maintenance Operations and Insulation Selection through Insulator Monitoring in polluted Environments by Pierre Thelier[1], Andrew Phillips[2], Javier Lopez Osuna[3], Javier Garcia Hernandez[1], Christiaan Engelbrecht[2], Ruben Alonso Arcones[1]; [1]Verescence La Granja Insulators, Spain; [2]EPRI; [3]REE;

Intelligent Insulator Defect Identification and Reporting: A Synergistic Approach Using Deep Learning and Language Models by Siyanda Biyela; Eskom Holdings SOC Ltd, South Africa;

Numerical Model Analysis of Laboratory Corona Tests of High Voltage Insulators and Hardware by STEPHEN BELL; K-LINE INSULATORS LTD, Canada;

Application of a Novel Test Method to Assess Hydrophobicity Transfer of Naturally Aged Composite Insulators by Peter Sidenvall[1], Johan Lundengård[1], Igor Gutman[1], Luis Diaz[2], André Deckwerth[3], Kjell Halsan[4], Mikko Jalonen[5], Fabian Lehretz[6], Michael Leonardsberger[7], Lars Rasmussen[8], Pablo Rodriguez[9], Thomas Schiml[10], Kübranur Varli[11], Dan Windmar[12]; [1]Independent Insulation Group, Sweden; [2]RTE, France; [3]50hertz, Germany; [4]Statnett, Norway; [5]Fingrid, Finland; [6]TenneT, Germany; [7]APG, Austria; [8]Energinet, Denmark; [9]Red Eléctrica, Spain; [10]E.ON, Germany; [11]Amprion, Germany; [12]Svk, Sweden;

New implementation of 500kV lines on the South African network by Sanjay Narain, Kaveer Ramharak, Amish Roopnarain, Raeesa Khan; NTCSA, South Africa;

Methodology of Risk Assessment of Important Overhead Lines by Jialun yang[1], Bin LIU[1], Songyuan Cao[2], Jian Wang[1], Kuanjun Zhu[1]; [1]State Grid Eelectric Power Engineering Research Institute, China, People's Republic of China; [2]Anhui Electric Power Company Limited, Hefei, Anhui, China;

Assessment of damage, lead time and costs for rebuilding distribution systems as part of a risk analysis in the event of a major ice storm by Nathalie Benoit; Hydro-Québec, Canada;

Sustainable solutions for ground-line decay prevention in wooden utility poles by Richard George; Polesaver, United Kingdom;

16:00 - 17:30

SESSION 67

Room 518bc

B4-7 HVDC/FACTS - RELIABILITY, PERFORMANCE MONITORING & CYBERSECURITY

Session Chair: Sid Parmar

Development of a Push-Based Alert System for an HVDC Link Using a Data Diode by Jean-Mathieu Dubois; POWER Engineers, Canada;

HVDC & STATCOMs, Not Your Typical IBRs by Michael Podbesek, Joe Warner; POWER Engineers, United States of America;

Performance of SVC and FACTS Systems around the World in 2021-2022 by Hiranya Suriyaarachchi; TransGrid Solutions, Canada;

Enhancing Cybersecurity in HVDC and FACTS Systems: A Comprehensive Approach to Standards Integration and Intrusion Detection by Walid Ali, Mohamed Atia, Emad Chamas; GE Vernova, Canada;

HVDC System Reliability – Investigation of Bipole Outages by Phaedra Victoria Ines Taiarol[1], Josh Burroughs[2], John Graham[3], Xin Li[4]; [1]Stantec Consulting; [2]Velco; [3]Graham e Graham; [4]Manitoba Hydro;

HVDC Digital Twin - Concepts and Roadmap by Arkadiusz Burek[1], John Birnie[2], Heater Spain[3], Annes Jeddy[4], Stelious Christou[5]; [1]Hitachi Energy; [2]Hatch Ltd; [3]EriGrid; [4]ISO; [5]EDF Renewables;

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TECHNICAL SESSIONS - WEDNESDAY, OCTOBER 1

16:00 - 18:00

SESSION 68

Room 520b

B5-2 EXPERIENCE WITH FULLY DIGITAL PACS

Session Chairs: Sakis Meliopoulos
Volker Leitloff

Experiences in the commissioning of IEC 61850 digital busbar protection systems. by Atef Boukadi[1], Julder Uzcategui Silva[1], José MENDEZ[1], Jorge Escurra[2], Miguel Diaz[2], Hugo Tapia[3]; [1]GE VERNOVA, Canada; [2]Engie Energia Peru; [3]Luz del Sur, S.A.A.;

Two real cases of IEC-61850 user-profile implementation that improves sustainability while cutting project-times and costs: Enel Colombia (utility) and ISA (TSO). by Daniel Sánchez Castán[1], Paola Diaz[2], Cesar Hernandez[1]; [1]Ingenieros Emetres, Americas and Colombia; [2]Enel Colombia;

Implementation of Non-Conventional Protection Automation and Control Schemes and IEC61850 communication System in the Expansion of a 500kV/138kV Substation for Transmission-Generation Application by Caren Ramos; EPCOR, Canada;

Secondary Injection Testing in Merging Units Considering Low Power Instrument Transformer Technology by Paulo Sergio Pereira Junior[2], Antoni Furlani Rosa[1], Rodolfo Bernardino[2], Gustavo Salge[2], Cristiano Martins[2], André Luiz Rios[1], Lucas Varela[1]; [1]SecuControl Inc, United States of America; [2]Conprove Engenharia, Brazil;

Challenges and their remedies for integration of edition-2 IEDs with lower edition SAS for health monitoring of grid assets. by Alok Nayan, Viplav C Reddy, Arvind Choudhary, Nishant Tyagi, Sunit Kumar Singh; Power Grid Corporation of India Limited, India;

Future of Digital Substations: An Analysis from Conventional Systems to Centralized Protection and Virtualized PAC for Scalability and Efficiency by Paola Andrea Díaz-Vargas[1], Oscar Andres Tobar-Rosero[2], Germán Darío Rueda-Carvajal[2], Luis Fernando Quintero-Henao[3], Héctor Andrés Florez-Celis[2], Daniel Sanchez-Castán[4]; [1]Independent consultant; [2]Universidad Nacional de Colombia, Colombia; [3]Enterprise Innovation; [4]IM3 - Ingenieros Emetres;

FLISR and IEC 61850 GOOSE communications over an LTE/5G network using QoS and IP/MPLS: Meeting latency requirements for protection in the electrical distribution grid by Mauricio Subieta; Nokia, United States of America;

Integrating PTP for IEC 61850 Process Bus Applications with Multi-Vendor Ethernet Switches by Curtis Ruff[1], Adam Rudd[1], Galina Antonova[2], Eric Chuang[2]; [1]EPCOR; [2]Hitachi Energy;

16:00 - 18:00

SESSION 69

Room 519b

C1-6 PS2/3. ASSET MANAGEMENT, PMUS, VPPS & CLIMATE CHANGE

Session Chairs: Antonio ILICETO
Peter Roddy

ReLife: an open-source Python library for survival analysis and asset renewal decisions for infrastructure managers. by Alexis Frémond[1], Thomas Guillon[1], Aya Hankir[2], Benoît Desvignes[2]; [1]RTE Réseau de Transport d'Électricité, France; [2]Artelys;

Probabilistic Life Cycle Costing Approach for Physical Assets: Application to Grounding Devices. by Darragi Messaoudi, Marie-Hélène Joannette-Cartier; Hydro Québec, Canada;

Leveraging Virtual Power Plants to Enhance Data Centers Reliability and Sustainability by Samaneh Morovati[1], Shadi Chuangpishit[1], John Wiltshire[2], Drazena Brocilo[2], Ben Rosenfeld[2], Selver Corhodzic[2], Amin Zamani[1]; [1]Quanta Technology; [2]Meta Platforms;

Computing of Power Networks in Quantum Era - PMU Data Encoding in Quantum Circuit by Hillol Biswas, M Manojkumar, S K Srivastava; WAPCOS LIMITED, India;

The Brazilian Interconnected Power System Experience with Energy Transition under Climate Change, Extreme Weather Events and Outdated Regulation by Paulo Gomes[1], Nelson Martins[2]; [1]PSQ, Brazil; [2]Brazilian National Academy;

Enhancing Climate Resilience in Power System Planning: An Integrated Framework by Maren Ihlemann[1], Jesse Bukenberger[2], Andrea Staid[2], Juan Carlos Martin[3]; [1]EPRI International, Canada; [2]EPRI, US; [3]EPRI Europe;

An analytical methodology to evaluate the outage return periods for substations subject to floods by Emanuele Ciapessoni[1], Diego Cirio[1], Andrea Pitto[1], Leonardo Mancusi[1], Alessandro Lazzarini[2], Giuseppe Berrettoni[2], Francesca Scavo[2], Federico Falorni[2], Laura Bianco[2]; [1]Ricerca sul Sistema Energetico - RSE S.p.A., Italy; [2]Terna S.p.A; Mohammad Tbaishat, YOUSEF Mashagbeh; SEPCO., Jordan, Hashemite Kingdom of;

A Simplified Damping Control Strategy for Black-Box Virtual Synchronous Generator Models by Tuhin Suvra Das, Udaya Annakkage; University of Manitoba, Canada;

Simulation-Based Training for System Operators: Adapting to Dynamic Grid Conditions with DTS by Vijitha Kandamkumarath, Sudeep M, Harish K Rathour, Ganesh T R; Grid Controller of India Limited, India;

16:00 - 18:00

SESSION 70

Room 520ad

C2-2 RESILIENT GRID OPERATIONS: FROM CONTROL STRATEGIES TO INTELLIGENT DECISION SUPPORT

Enhancing The Stability Of Jordan's Electricity Grid: Challenges and Practical Solutions "SEPCO Case Studies" by Abdallah Mohammad Alhayajneh, Yousef "Mohammad Fuad" Alababneh; Samra electric power company SEPCO, Jordan, Hashemite Kingdom of;

The Role of Self-Limiting Facilities in Enhancing Grid Reliability by Divya Jain, Satish Natti; GridAxon, Inc.;

AI-Driven DVR Control for Enhancing Power System Resilience in Hybrid Energy Systems by Mohammad Tbaishat, YOUSEF Mashagbeh; SEPCO., Jordan, Hashemite Kingdom of;

A Simplified Damping Control Strategy for Black-Box Virtual Synchronous Generator Models by Tuhin Suvra Das, Udaya Annakkage; University of Manitoba, Canada;

Simulation-Based Training for System Operators: Adapting to Dynamic Grid Conditions with DTS by Vijitha Kandamkumarath, Sudeep M, Harish K Rathour, Ganesh T R; Grid Controller of India Limited, India;

Artificial Intelligent (AI) Algorithms to Optimize Multi-objective Economic and Emission Dispatch Problems by Abdel Rahman Alheyasat, Mamoo'n Almomani; National Electric Power Company/ Jordan, Jordan, Hashemite Kingdom of;

Optimal Network Partitioning for Large Power Systems Using Impedance and Generator Coherency by Harindya Shehani Attanayaka; University of Manitoba, Canada;

16:00 - 18:00

SESSION 71

Room 518a

C5-6 SCHEMES TO SUPPORT THE ENERGY TRANSITION

Session Chair: Gayan Wijeweera

Green Transformation for decarbonization in Japan by Hiroki SAKAI[1], Kazuya YOKOYAMA[1], Yuki KATAOKA[1], Daisuke TAMURA[2], Kenichi SUGAHARA[2]; [1]Chubu Electric Power Co.,Inc., Japan; [2]Chubu Electric Power Grid Co.,Inc., Japan;

Study of all options and regulations to finalize the strategy to meet decarbonization target of meeting consumption through renewable energy by Amit Kumar, Beni Madhav, M Thirumala Reddy, Ravindra Nath Gupta; Power Grid Corporation of India Ltd, India;

Impact of Policy Framework Revamp on Facilitating Renewable Energy Integration with India's Transmission Network by Amandeep Kala; Powergrid Corporation of India Limited, India;

Renewable Hydrogen Certification: Ensuring Sustainability in the Global Energy Market by Barbara Duarte Barbosa; Brazilian Wind Energy Association (ABEEólica), Brazil;

Energy attribute certificate as a robust mechanism for the renewable energy development. by Ricardo Gedra[1], Vital Neto[2]; [1]Instituto de Pós-Graduação & Graduação, Brazil; [2]Independent consultant;

Enhancing Additionality to accelerate renewable Energy Investments through EACs and Carbon Offsets in emerging Markets, in the case of the Russian Electricity Market by Anna Pavlycheva[1], Valdislav Berezovsky[2], Natalia Kuznetsova[1], Nikita Ivanov[3]; [1]NP Market Council; [2]Carbon Zero LLC; [3]SKM.PRO;

CFDs: A Discussion for Future Application in Brazil by Eduardo de Aguiar Sodré; POLI-UPE, Brazil;

16:00 - 18:00

PAPER & TUTORIAL

Room 522a

EHV EHV: GEOMAGNETIC INDUCED CURRENTS (GIC) AND

A2 A2 TUTORIAL: EFFECTS OF DC BIAS ON POWER TRANSFORMERS

Session Chair: Stefan Tenbohlen

Geomagnetically induced currents in Alberta during space weather events of 2024: A comparison to extreme storm statistics by Darcy Raymond Cordell[1], Ian Mann[1], Hannah Parry[1], Ryan MacMullin[2]; [1]University of Alberta, Canada; [2]AltaLink L.P.;

Identification of At-Risk Substations in the German Transmission Grid from Space Weather by Aline Guimarães Carvalho[1], Leonie Pick[1], Alexander Grayver[2], Stefan Tenbohlen[3]; [1]German Aerospace Center (DLR), Germany; [2]University of Cologne, Germany; [3]University of Stuttgart, Germany;

A2 tutorial: Effects of DC Bias on Power Transformers by Stefan Tenbohlen[1], Patrick Picher[2], Afshin Rezaei Zare[3]; [1]University of Stuttgart, Germany; [2]Hydro Quebec, Canada; [3]York University, Canada;

TECHNICAL SESSIONS - THURSDAY, OCTOBER 2

10:30 - 12:15

SESSION 72

Room 520f

A2-7 POWER TRANSFORMER & REACTOR: MODELLING

Session Chair: Claude Rajotte

Comparative Study of Temperature Rise Test Using Cooling Curve Analysis for Liquid-Filled Transformers by Ali Al-Abadi[1], Wei Wu[2]; [1]HITACHI Energy, Germany; [2]HITACHI Energy, USA

Methodology to Increase Capacity of Power Transformers based on the Temperature-Rise Test Results Margins by Juan Gonzalo Castellanos, Enrique Betancourt; Prolec GE, Mexico

Simplification of Radiator Modelling for Transformer Complete-Cooling-Loop CFD Simulation by Zhengbo Xu[1], Sicheng Zhao[1], Qiang Liu[1], Zhongdong Wang[1], Massimo Negro[2], Luc Dorpmanns[3]; [1]The University of Manchester, United Kingdom; [2]Weidmann Electrical Technology AG, Switzerland; [3]SGB-SMIT Group, Netherlands

Enhancing Top-Oil Temperature Predictions Using LSTM Neural Networks and the IEC 60076-7 Thermal Model by João Pedro da Costa Souza[1], Patrick Picher[2], Issouf Fofana[1], Arnaud Zinflou[2]; [1]Université du Québec à Chicoutimi, Canada; [2]Hydro-Québec

Physics-based thermal model of Shunt Reactors by Alan Sbravati[1], Ernesto Ceron[2], Javier Gutierrez[3]; [1]Hitachi Energy, United States of America; [2]Hitachi Energy, Sweden; [3]Hitachi Energy, Spain

Research on the Impact of Non-Uniform Temperature Distribution Inside Large Power Transformers on Insulation Margin by Shuqi Zhang[1], Tao Zhu[1], Xiaolin Zhao[1], Li Ma[2], Yuwei Zhong[1], Zuoxian Wang[1], Huiwen He[1]; [1]China Electric Power Research Institute, China, People's Republic of; [2]Zhejiang Huayun Information Technology Co., LTD

Analytical Derivations and Physics-based Modelling of a Deformed Winding and its FRA features by Zhongdong Wang[1], Ziyuan Li[1], Zhaozheng Wang[1], Bozhi Cheng[2], Dahlina Sofian[3]; [1]The University of Manchester, United Kingdom; [2]SSE Renewables, United Kingdom; [3]Scottish Power Renewables, United Kingdom

10:30 - 12:15

SESSION 73

Room 518a

B1-1 SMART DIAGNOSTICS & CLIMATE-RESILIENT STRATEGIES FOR CABLE SYSTEMS

Session Chair: Harry E. Orton

Quantifying Risk of VLF Cable Testing and Comparison to Alternative Approaches by Ben Lanz[1], Laura Cardoso[1], Michael Joseph[2]; [1]Osmose, United States of America; [2]American Wire Group, USA;

Advanced Soil Drying for Accurate Ampacity Calculations by Jayson Patrick, Edstan Fernandez; ELEK Software, Australia;

Behaviour of Cable Systems under Large Disturbances by Harry E. Orton[1], Sudhakar Cherukupalli[2], Russell Wheatland[3], Mingli Fu[3], Abdou-K Top[3], Unnur Kristiansdottir[3], Giulia Bergamo[3], Masahiro Inuoe[3], Daisuke Okamura[3], Juan Manuel Maximo Leon[3], Richard Joyce[3], John Eidinger[3], Dennis Johnson[3], Yingli Wen[3], Anna Reani[4], Marvic Verzarno[4]; [1]Convener WG B1.54; [2]Secretary WG B1.54; [3]Member WG B1.54; [4]Corresponding Member WG B1.54;

Investigating Overvoltage Phenomena and Partial Discharge Characteristics in Medium Voltage Underground Cables for Enhanced Reliability and Performance by Ayham Bakeer, Tariq Alnatour; Jordanian Electrical Power Company JEPCO, Jordan, Hashemite Kingdom of;

Power grid predictive monitoring through continuous surveillance of transient phenomena by Denis Stanescu[1,3], Cornel Ioana[1,2], Angela Digulescu[1,3], Annamaria Sarbu[1,4]; [1]Altrans Energies, France; [2]GIPSA-Lab, UMR 5216 CNRS, Université Grenoble-Alpes, Grenoble, France; [3]Telecommunications and Information Technology Department, Military Technical Academy "Ferdinand I", Bucharest, Romania; [4]Land Forces Academy "Nicolae Balcescu" Sibiu, Romania;

A new Early Warning System for Partial Discharge in MV-HV Cable Grid by Klaus Winter[1], Andreas Winter[2], Johan Hollander[2]; [1]Holmgren Institute Stockholm; [2]Swedish Neutral AB;

10:30 - 12:15

SESSION 74

Plenary Room

B2-11 INNOVATIVE FOUNDATIONS & MATERIALS FOR RESILIENT TRANSMISSION TOWERS

Session Chairs: Rob Meijers
Lukasz Nazimek

Development of precast materials for power transmission towers by So Kato[1], Yoshinori Aoki[1], Keisuke Fujishima[1], Takanori Seki[1], Kenta Takahashi[1], Kento Fuji[1], Hiroshi Saito[2], Seishi Numakura[2], Hiroyuki Yokoyama[2], Keisuke Takemori[3], Yoshifumi Niino[3]; [1]Tohoku Electric Power Network co., inc., Japan; [2]Tohoku Pole Co., Ltd., Japan; [3]Nippon Hume Corp, Japan;

The Effects of Climate Change Flooding on Overhead Powerline Foundations in South Africa by Kabelo Molaodi, Sibonelo Nzama; NTCSA, South Africa;

From Weakness to Strength - Innovating Soil Strength and Corrosion Solutions for Renewable Energy infrastructure in creek salt pan area by Bimlesh Kumar Renu, Pankaj Kumar Dwivedi, Nitesh Kumar SINHA, Raj Kumar Singh, Abhay Kumar, Vamsi Rama Mohan BURRA; Power Grid Corporation of India Limited, India;

Innovative Solutions for the Refurbishment of Grillage Foundation while the Transmission Line is Loaded by Gino Pillay, Siyabonga Dubazana, Bharat Haridass, Chandresh Juggernath; Nation Transmission Company South Africa, South Africa;

Advance Design Solution for Transmission Tower Foundations on Steep Slopes by Pankaj Kumar Dwivedi, Karanvir Singh PUNDIR, Abhay Kumar, Vamsi Rama Mohan BURRA; Power Grid Corporation of India Limited, India;

Emergency Interventions for Transmission Tower Stability: The Tamsa River Challenge by PANKAJ KUMAR RAI, Yugesh Kumar Dixit, Mrityunjaya Choubey; POWERGRID CORPORATION OF INDIA LIMITED, India;

A Study On Tower Earthing Substitution Material For Corrosion Mitigations Solutions In Inundated Area Within Grid System In Malaysia. by MOHD IMRAN SHAMSUDIN[1], AZWADI MOHAMAD[2], NADIAH SALWI HUDI[1], NORHASLIZA MOHD HATTA[2]; [1]Tenaga Nasional Berhad, Malaysia; [2]TNB Research Malaysia;

10:30 - 12:15

SESSION 75

Room 518bc

B4-8 APPLICATION OF REALTIME SIMULATION & HARDWARE IN LOOP IN HVDC/FACTS/IBRS

Session Chair: Agustin Diaz-Garcia

Method for Estimation of Fault Location in the Dedicated Metallic Return Line of HVDC Transmission System: Validation Using Real-Time HIL Simulation by Soumyadeep Banerjee, Pradeep Tanaji Patil, Sudhir Kumar Basia, V.P. Srivastava, M. Srinivasa Rao; Power Grid Corporation of India Limited, India;

Dynamic Performance Assessment of FPGA-based MMC Systems Integration on Real-time Simulator by HUI DING, Xianghua Shi, Yuan Chen, Yi Zhang; RTDS Technologies Inc., Canada;

De-Risking Grid Forming Battery Energy Storage Projects - Grid Code Compliance testing of a 50 MW Storage System using Control-Hardware-in-the-Loop by Andreas Bammes[1], Timo Wagner[1], Anushi Tripathi[1], Gert Mehlmann[1], Matthias Luther[1], Albiona Lalinovci[2], Benjamin Braun[2], Stefan Henninger[2], Jason Hill[3], Sebastian Hubschneider[4]; [1]Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; [2]Fluence Energy GmbH; [3]Statkraft UK Ltd.; [4]OPAL-RT Germany GmbH;

Enhancing Tuning and Testing of Grid-forming IBRs with Real-time Simulators by Luo Liu, Yi Qi, Christian Jegues, Sumek Elimban; RTDS Technologies Inc., Canada;

10:30 - 12:30

SESSION 76

Room 520b

B5-3 RENEWABLE ENERGY AND APPARATUS PROTECTION

Session Chairs: Saman Alaeddini
Innocent Kamwa

Synchronous Machine Protection of the Future for Large Hydro by Janos Peter Pattantyus, Denis Francesconi, Jean Raymond; Hydro-Québec, Canada;

Essentials of Renewable Energy Protection and Monitoring by Daniel Ransom; GE Vernova, United States of America;

Digital Substation Application Concepts for IBR Renewable Energy Plants by Wayne Hartmann, Jacobus Theron; GE Vernova, Canada;

Comprehensive Protection Philosophy for BESS in Distribution Networks (33kV & 11kV) Supporting Weak Infeed, LVRT & HVRT Scenarios by Manvendra Singh Hada, Prayas Gupta; IndiGrid Limited, India;

Resiliency of the Protection System for Capacitive Compensation Banks after a Real Event Learning by GERMAN GUTIERREZ; ISA INTERCOLOMBIA, Colombia;

Hardware-in-the-Loop Simulation of Transmission Capacitor Banks for Training and Analysis by Genesis Alvarez, Robert Orndorff, Carlos Velez, Thomas Purcell, Robert Allison, Ibukunoluwa Korede; Dominion Energy, United States of America;

Data Sources for AI Based Applications in Digital Substations by Alexander Apostolov; OMICRON electronics, United States of America;

Real-Time Field Implementation of Adaptive Single-Phase Auto-Reclosing for EHV Transmission Lines: Lessons Learned. by SUNIL SURASHE, Akshay Sharma, Anand Dubey; POWERGRID CORPORATION OF INDIA LIMITED, India;

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TECHNICAL SESSIONS - THURSDAY, OCTOBER 2

10:30 - 12:30

SESSION 77

Room 519b

C2-3 OPERATIONAL STRATEGIES & TOOLS FOR ENHANCING GRID RESILIENCE & MANAGEMENT

Session Chair: Alexandre Lemire

Cold load pickup management behind the meter: enhancing resilience in low-voltage networks by Luis Rueda[1], Nathalie Benoit[1], Michaël Fournier[1], Daniel Galeano-Suarez[2], Alejandro Parrado-Duque[2], François Laurencelle[1], Follivi Kloutse Ayevide[1]; [1]Hydro-Québec, Canada; [2]Université du Québec à Trois-Rivières, Canada;

Innovative Approach for the Cold Load Pickup Management at the Meter by Alexandre Lemire, Bruno Cantin; Hydro-Quebec, Canada;

Implementing SCADA-EMS for Microgrid Management: A Case Study of the Greek DSO by Stefanos Kokkinelis, Despina Koukoula, Charalampos Pappas; Hellenic Electricity Distribution Network Operator S.A., Greece;

System Operation Strategy for Grid Enhancement and Prevention of Sumatera Power System Blackout by mohammad bachtiar, feri fivaldi, Amiruddin bz; pt pln, Indonesia;

Operational management of digital electric networks by ALEXANDER KHRENNIKOV[1], Nikolay Aleksandrov[2], Sergey Mikhailov[3]; [1]JSC "Rosseti Scientific & Research Center", Russia; [2]SPE "Dynamics", Russia; [3]National Research University MPEI , Russia;

Operational and organizational alarm management support by integrating machine learning, metrics, and user interface design by Antony Hilliard[1], David Marino[1], Georgios Mitrentsis[2], Jhelum Chakravorty[1], Susanne Schmitt[2]; [1]Hitachi Energy Research, Canada; [2]Hitachi Energy Research, Germany;

10:30 - 12:15

SESSION 78

Room 520e

C3-1 TECHNOLOGY INNOVATION, STUDIES, & SOLUTIONS FOR A MORE SUSTAINABLE & RESILIENT POWER SYSTEM

Session Chair: Mercedes Vazquez

Risk assessment and mitigation of natural hazards for overhead lines in in Austria by Klemens Reich; Austrian Power Grid AG, Austria;

Meteo-Hydrological Analysis of Climate Change on the Volta River, Akosombo Hydroelectric Dam by Clement Boakye, Kwadwo Asante Addo Addo, Thelma Se Adjidjonu, Gilbert Kusi Kwarteng; Volta River Authority;

Design Inlet Micro Hydro from Mixing Outlet Cooling Tower Hot Water and RainWater Gunung Salak Geothermal Power Plant by Redho Nur Ridho[1], Mulyadi Kusumah[2], I Made Chikas Rendran Taka[3], Nugraha Septa[4], Danu Sito Purnomo[5], Anna Reani[6]; [1]PT PLN Indonesia Power Salak Geothermal Power Plant, Indonesia; [2]PT PLN Indonesia Power Salak Geothermal Power Plant, Indonesia; [3]PT PLN Indonesia Power Salak Geothermal Power Plant, Indonesia; [4]PT PLN Indonesia Power Head Office HSE, Indonesia; [5]PT PLN Indonesia Power Kamojang Geothermal Power Plant, Indonesia; [6]PT PLN Indonesia Power Head Office HSE, Indonesia;

11041_C3_PS1_SINGH_IN_Green Substation - 100% Green Captive Power using GH2 by Himanshu Mittal, Akhilesh Kumar Singh, Samrat Jain; POWER GRID CORPORATION OF INDIA LIMITED, India;

Environmentally sustainable Green Circuit Breakers (SF_6 Free) by Himanshu Mittal, Akhilesh Kumar Singh, Samrat Jain; POWER GRID CORPORATION OF INDIA LIMITED, India;

Reduction of Vulture Electrocution risk on Powerlines in high Concentration Areas by Nishal Mahatho, Andreas Beutel, Rudi Kruger; Eskom, South Africa;

10:30 - 12:15

SESSION 79

Room522a

D1-1 INNOVATIVE SOLUTIONS FOR PD MITIGATION & ECO-FRIENDLY INSULATION IN HV SYSTEMS

Session Chair: Simon Sutton

A novel insulating gas mixture : PMVE-based solutions for environmental and technical challenge. by Hyun Jae JANG[1,2], Yeon Ho OH[1], Ki Dong SONG[1], Jin Gyu KIM[2]; [1]Korea Electrotechnology Research Institute, Korea, Republic of (South Korea); [2]Kyungpook National University;

High Voltage filters for partial discharge level reduction from factory or field test voltage sources by William Larzelere[1], Mathieu Lachance[2]; [1]Evergreen HV LLC, United States of America; [2]Omicron Canada;

12:15 - 13:30

SESSION 80

Room 521abc

B2-12 AI & SMART GRID SOLUTIONS: FROM LIVE WORKING TO WILDFIRE DETECTION

Session Chair: Asif Bhangor

Artificial Intelligence (AI) Driven Knowledge Management for Sustained Expertise in Electrical Transmission Line Engineering by Janos Toth[1], Balint Nemeth[2], Levente Racz[2]; [1]RecognAIse Technologies, Canada; [2]BME, Hungary;

AI-Augmented Systems for Enhancing Safety and Efficiency in Live-Line Maintenance of Electrical Transmission Lines by Janos Toth[1], Balint Nemeth[2], Levente Racz[2], Gabor Göcsei[2]; [1]RecognAIse Technologies, Canada; [2]BME, Hungary;

A new topology named Synergic Overhead Lines suitable for extreme weather events by Carlos Alexandre Meireles do Nascimento[1], Joao Rosolem[2], Nayara Montes[3]; [1]Cemig GT, Brazil; [2]CPQD; [3]UFJF;

In pursuit of Extinguishing Wildfire Risk by Edwin GonoSantosa, Brett Hague, Adam Malenczak, James Simmonds, Susan Thai; ATCO Electric, Canada;

Detection of Forest Fire Outbreaks based on Corelation between Electrical Signals Signature Analysis and Image Processing by Yvan Estienne[1], Alain Grisval[2], Stéphane Lagadec[3]; [1]OMEXOM TTE, France; [2]OMEXOM, France; [3]SDEL contrôle commande;

13:30 - 15:30

SESSION 81

Room 518a

B1-2 INNOVATIONS & MONITORING IN HV/MV CABLE SYSTEMS

Session Chair: Harry E. Orton

Finding Damage and Failures in HV Cables using Passive Sensing by Steven Blair, Marcus Perry, Linu George, Morris Kelly; Synaptec, United Kingdom;

Development and qualification of the world's first pluggable rigid cable joint for HVAC subsea cables up to 170kV by Vukasin Basara[1], Dirk Hansen[2], Pat Oakley[3]; [1]PFISTERER Kontaktsysteme GmbH; [2]Tennet TSO GmbH; [3]PFISTERER CSU UK Ltd.;

B4_PS1_Italy_Corsaro_MVDC Superconducting MgB2 based Cables Systems supporting Decarbonization and Energy demanding Industry by Pietro Corsaro[1], Tommaso Botto[2], Umberto Melaccio[2]; [1]C&G Agency GmbH, Switzerland; [2]ASG Superconductors SpA, Italy;

Test Recommendations of CIRED WG 2017-1 for Screen Connections of MV Cables and new Conclusions by Klaus-Dieter Haim; University of Applied Sciences Zittau / Görlitz, Germany;

Decision Support System for Transmission Underground Cable Projects by Kings Wong; Hydro One, Canada;

Mitigating risk and costs for Offshore Wind Farms with advanced DES cable monitoring by Ahmed El-Rasheed; Megger, Canada;

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TECHNICAL SESSIONS - THURSDAY, OCTOBER 2

13:30 - 15:30

SESSION 82

Room 520b

B5-4 LINE PROTECTION

Session Chairs: Bogdan Kasztenny
Volker Leitloff

Time-domain based protection for transmission lines: secure and reliable solution for complex networks by Michael Kockott[1], Sinisa Zubic[2], Marcin Krakowski[2], OD Naidu[3]; [1]Hitachi Energy, United States of America; [2]Hitachi Energy, Sweden; [3]Hitachi Energy, India;

Experience of piloting travelling wave protection relay on ATCO's transmission line by Janak Acharya; ATCO, Canada;

Transforming Differential Relay Communication by Several Strategies for Optimal Fiber Utilization and Reliability: Experiences From Recent Pilot Installation by Aman Khurana, Akshay Sharma, Ankit Vaish, Anand Dubey; POWERGRID CORPORATION OF INDIA LTD, India;

Setting load encroachment and power swing blocking functions to comply with PRC-026-05 by Michael Kockott, Bharadwaj Vasudevan; Hitachi Energy, United States of America;

Bridging the gap between protection and planning for holistic analysis of transmission system performance by Ishwarjot Anand[1], Benny Varughese[2], Jorge Velez[3], Saman Alaeddini[1], Mehrdad Chapariha[1], Gary Webster[1]; [1]Quanta Technology, Canada; [2]Consolidated Edison, USA; [3]Quanta Technology, USA;

Design Criteria for the Monitoring and Protection Schemes of Submarine Cables by Ricardo Quijada[1], Luis Chavez[2]; [1]AtkinsRéalis, Canada; [2]Independent Consultant;

Mitigating Overreaching in Distance Relays and Addressing Mutual Coupling in Double-Circuit Transmission Lines by HARSHKUMAR SONI, Akshay Sharma, Pankaj JHA; POWER GRID CORPORATION OF INDIA, India;

Investigation of Operational Detection of Vegetation Contacts with Medium Voltage Conductors by Jeff Wischkaemper, B. Don Russell, Carl Benner, Karthick Manivannan; Texas A&M University, United States of America;

13:30 - 15:30

SESSION 83

Room 519b

C2-4 ADVANCED METHODS FOR STABILITY & RESERVE MANAGEMENT IN RENEWABLE POWER SYSTEMS

Session Chair: Tina Chou

Reserve Requirements Estimation and Pooling Methods for Intermittent Energy Resources in GCC Grid by Ahmed ALJaafari, Nasser Al-Shahrani, Hashim Al-Zahrani; GCCIA, Saudi Arabia;

A Remedial Action Scheme to Prevent Short-Term Voltage Instability in Presence of WECC Generic Photovoltaic System Model by Siavash Yari[1], Innocent Kamwa[1], Dmitry Rimorov[2]; [1]Laval University, Canada; [2]IREQ, Hydro-Quebec, Canada;

Automatic Generation Control of a solar power plant in the Indian power system by Anmol Sharma, Phanisankar Chilukuri, Rohit Shukla, Vivek Pandey; Grid Controller of India Limited, India;

Solar Photovoltaic Power Penetration Estimation on Distribution Load Feeders for Black Start by Tina Chou[1], Yi-Jun Wang[2]; [1]INTERGRID LTD., Taiwan; [2]Tungnan University, Taiwan;

Recommended Electrical Grid Operational Technologies for Cities Running on 100% Renewable Energy by SAAD ISRARUL HAQ; ACWA Power, Saudi Arabia;

Recommended Electrical Grid Innovation Technologies for a Sustainable and Reliable 100% Renewable Energy Grid by SAAD ISRARUL HAQ; ACWA Power, Saudi Arabia;

13:30 - 15:30

SESSION 84

Room 522a

D2-1 CYBERSECURITY & SMART COMMUNICATIONS FOR RESILIENT POWER GRIDS

Session Chair: Essi Shams

Open Innovation and Technologies for Artificial Intelligence in Power Systems by Alexandre Parisot; Linux Foundation Energy, United States of America

Towards demonstrating the win-win Cohabitation of Open Source and Standardization by Alexandre Parisot[1], Laurent Guise[2], Boris Dolley[3]; [1]Linux Foundation Energy, United States of America; [2]EnergySemantic.com, France; [3]RTE, France;

Forecasting Customer Demands in Distribution Service Operations at Hydro-Québec by Amira Dems[1], Jai kumar Drave[2]; [1]Hydro-Quebec Research institute- IREQ, Canada; [2]HEC Montreal, Canada

A Review of SCADA Considerations for HVDC Projects by Frida Ceja Gomez, Hung Tran; AtkinsRealis, Canada

Bridging the Data Management Gap by Christopher Johnson[1], Maria McMurtry (Hydro One)[2], Kristen Loney (Hydro One)[2]; [1]Amidyne Solutions, Canada; [2]Hydro One

Utility Hybrid PLTE and Fiber Network Deployment in Support of Grid Modernization Use-Cases by Jayson Brian Shiau[1], Thomas Flanagan[1], Arien Majette[2], Michael Morgan[2]; [1]ComEd, United States of America; [2]Exelon, United States of America

The Need for a Comprehensive Communications Strategy to Support the Evolving Utility Grid: Tampa Electric – A Case Study by Philip Andrew Zinck[1], Bruce Albright[2]; [1]Tampa Electric; [2]Burns & McDonnell

Passive Optical Network Deployments for Enhanced Grid Communications by Juan Ornelas[1], James Conway[2], Michael Morgan[1], Hugo Castaneda[2]; [1]Exelon, United States of America; [2]Commonwealth Edison, United States of America

14:00 - 15:30

NGN KNOWLEDGE SHARING SESSION 2

Room 519a

NGNs Around The World

16:00 - 17:30

SESSION 85

Room 520b

B5-5 COMMISSIONING, TESTING, SETTING AND CONFIGURATION

Session Chairs: Volker Leitloff
Bogdan Kasztenny

User-centric Tools for Engineering, Commissioning and Operation Of Protection and Automation Devices by PAUL FRANCIS LOURENCO; SIEMENS CANADA LIMITED, Canada

Performance Based Protection Relay Commissioning by Weimin Wang, Tim Frazer, Brendan Janssen, Hasib Imam, Wade Milton, Kelly Weiler; Hydro One, Canada

Centralized Relays version and settings management by Akhilesh Chandrakar, Thanigaivel Murugan, Shweta Sawant, Siddhalingappa Dulange, Syam Sunder, Sneha Joshi, Vivekanandan Sivansankaran, Shyamjyoti Sarkar; Tata Power Company, India

Enhancing Digital Substation delivery: The Role of Laboratory Testing in IEC 61850 Projects by Marc-André Perron, Keven Henry, Tatiana Guerrero, Micah Lim; BBA Consultants

Hidden Failure Detection via Dynamic State Estimation and Hypothesis Testing by Athanasios Meliopoulos, George Cokkinides; Georgia Tech, United States of America

Comparison of Processes for Testing, Commissioning and Maintenance Methods - Digital Versus Conventional Substations by Craig Wester, Mike Ramlachan; GE Vernova, Canada

Digital Protection learnings, challenges and improvements with Integrated FAT Setup, evaluation methodology & multiple solutions by Balaji Sethuraman[1], Dayanand Konduskar[1], Akhilesh Chandrakar[1], Murugan Thanigaivel[1], Vivekanandan Sivasankaran[1], Naganjaneyulu Sankarsetty[2], Ramakant Madane[1], Girish Jawale[1]; [1]THE TATA POWER COMPANY LIMITED, India; [2]TOSHIBA T&D TTDI

16:00 - 17:30

SESSION 86

Room 522a

D2-2 AI-DRIVEN INNOVATION & CYBERSECURITY IN MODERN POWER GRIDS

Session Chair: Essi Shams

Open Innovation and Technologies for Artificial Intelligence in Power Systems by Alexandre Parisot; Linux Foundation Energy, United States of America;

Towards demonstrating the win-win Cohabitation of Open Source and Standardization by Alexandre Parisot[1], Laurent Guise[2], Boris Dolley[3]; [1]Linux Foundation Energy, United States of America; [2]EnergySemantic.com, France; [3]RTE, France;

Forecasting Customer Demands in Distribution Service Operations at Hydro-Québec by Amira Dems[1], Jai kumar Drave[2]; [1]Hydro-Quebec Research institute- IREQ, Canada; [2]HEC Montreal, Canada;

A Review of SCADA Considerations for HVDC Projects by Frida Ceja Gomez, Hung Tran; AtkinsRealis, Canada;

Utility Hybrid PLTE and Fiber Network Deployment in Support of Grid Modernization Use-Cases by Jayson Brian Shiau[1], Thomas Flanagan[1], Arien Majette[2], Michael Morgan[2]; [1]ComEd, United States of America; [2]Exelon, United States of America;

Anomaly detection in distribution automation systems: a load-specific Federated Learning solution to data heterogeneity by Dhiaa Elhak Rebbah, Mohammad Ali Sayed, Mourad Debbabi; Concordia University;

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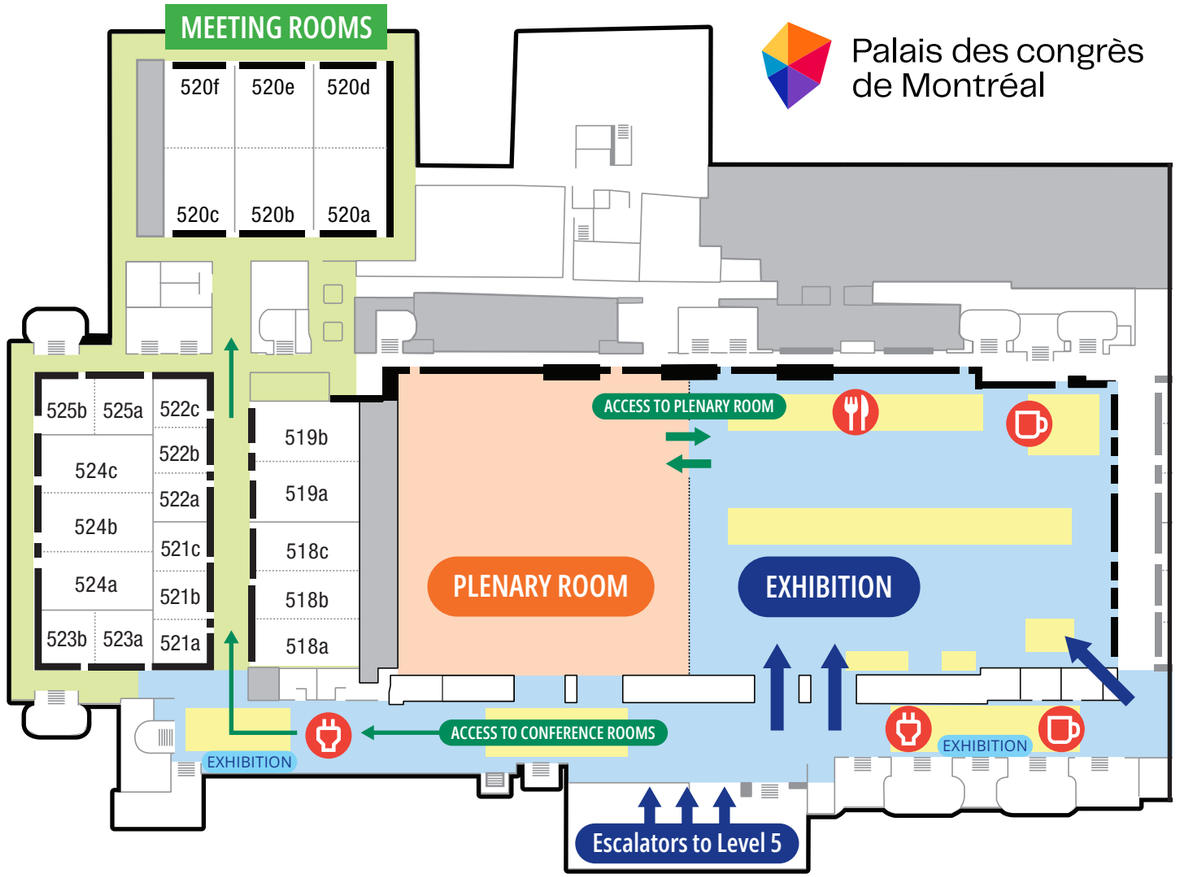
Take escalators from Level 2 to Level 5



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MONDAY, SEPTEMBER 29

NGN KNOWLEDGE SHARING SESSION 1

Mind the Gap: Lessons from Experienced Professionals to the Next Generation

12:30 – 14:00
ROOM 519b

(OPEN TO DELEGATES ONLY)

WEDNESDAY, OCTOBER 1

NGN PANEL & LUNCH

Driving Innovation in the Energy Industry: Lessons from the Past & Opportunities for the Future

12:15 – 13:30
PLENARY ROOM

(OPEN TO DELEGATES ONLY)

THURSDAY, OCTOBER 2

NGN KNOWLEDGE SHARING SESSION 2

NGNs Around The World

14:00 – 15:30
ROOM 519a

(OPEN TO DELEGATES ONLY)

NGN Reception (PRE-REGISTRATION REQUIRED)

19:00 – 22:30
INTERCONTINENTAL MONTREAL HOTEL - LA TERRASSE NORDHEIMER
360, St-Antoine Street West, Montreal

This Networking Event at the CIGRE Montréal Symposium brings together Young Professionals and seasoned Industry Leaders in a more interactive setting to wind down after the Conference. Expect light food, cold drinks, friendly people, and interesting conversations!

AWARD PRESENTATION OF THE 11 BEST NGN PAPERS
AWARD PRESENTATION OF THE 11 BEST STUDENT PAPERS

Sponsor Speech by AtkinsRéalis

AtkinsRéalis

Friday, October 3, 2025

TECHNICAL VISITS (PRE-REGISTRATION REQUIRED)

Meeting point: Pick-up badge desk HALL VIGER LEVEL 2

Participants **must present identification** to board the bus: **PASSPORT** (a driving licence is sufficient for Canadian residents)

The buses will depart from the Palais des Congrès, returning to the same location

TOUR A

Beauharnois Generating Station


Photo © Hydro-Québec

Location:
80, boul. de Melocheville
Beauharnois (QC) J6N 0M1
Around 40 kms from Montréal

Each tour is limited to 50 participants.

TOUR 1 07:30 - 12:45
TOUR 2 08:45 - 14:00
TOUR 3 11:30 - 16:45
TOUR 4 12:30 - 17:45

Built in 1929, Beauharnois Generating Station is the fifth most powerful and the longest run of river generating station in Québec with its 36 generating units. The tour will explain its history and how it generates more than 1,900 megawatts.

The tour includes:

- Visit of the information center: Construction stages of the power station, hydraulic power of the river, the channel and management of water, hydroelectric production and electricity transmission.
- Visit of the generating station: Roof (view of the water intake), machine room, turbine pit.
- The tour also includes a quick stop close to Chateauguay substation 765 kV an its HVDC converter.

TOUR B

Hydro-Québec's Research Institute (IREQ)


Photo © Hydro-Québec

Location:
1800 boul. Lionel-Boulet
Varennes (QC) J3X 1S1

Each tour is limited to 84 participants.

TOUR 5 08:30 - 13:15
TOUR 6 13:00 - 17:45

The tour of Hydro-Québec's Research Institute will allow you to visit the biggest electricity research centre in North America. You will see many laboratories that work on hydroelectric powerplants optimization, an effective simulation of a power grid, the production of many different maintenance robots, research in battery materials and power transformer approval.

The tour includes:

- Simulation laboratory: IREQ's calculation centre and power grid simulation software, Hypersim. The laboratory is mainly used to optimize the production and the transmission of energy.
- Experimentation laboratory: Laboratory that produces Hydro-Quebec's small fleet of robots that helps for inspection and maintenance of the power grid as well as hydroelectric structures and equipment.
- Center of excellence in transport electrification and energy storage (CETEES): world-class innovation hub in the field of battery materials for electric vehicles and other energy storage applications, both stationary and mobile.
- High-voltage laboratory: The biggest high-voltage laboratory of North America where various tests are made for the approval of power transformers and testing of various high-voltage devices.

Social Events & Services

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SEPTEMBER 29 MONDAY

BREAKFAST (OPEN TO ALL)
SPONSORED BY
- 06:45 – 08:00
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NETWORKING BREAKS (OPEN TO ALL)
(Times are subject to changes)
SPONSORED BY
- 10:30 – 11:00 PLENARY ROOM
- 16:00 – 16:30 IN THE CORRIDOR BETWEEN ROOMS 518 & 521

LUNCH (OPEN TO ALL)
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- 12:30 – 14:00
- PLENARY ROOM

WELCOME RECEPTION CASUAL (OPEN TO ALL)
Get the Conference off to a great start by networking!
SPONSORED BY
- 18:00 – 20:00
- IN THE EXHIBITION

SEPTEMBER 30 TUESDAY

WOMEN IN ENERGY (WiE) BREAKFAST (PRE-REGISTRATION REQUIRED)
SPONSORED BY
- 06:30 – 08:00
- ROOM 720 - LEVEL 7

BREAKFAST (OPEN TO ALL)
SPONSORED BY
- 06:45 – 08:00
- IN THE EXHIBITION

NETWORKING BREAKS (OPEN TO ALL)
(Times are subject to changes)
SPONSORED BY
- 10:00 – 10:30
- 15:30 – 16:00
- IN THE EXHIBITION

LUNCH (OPEN TO ALL)
SPONSORED BY
- 12:00 – 13:30
- IN THE EXHIBITION

ESPRESSO BAR (OPEN TO ALL)
SPONSORED BY
- 08:00 – 17:00
- IN THE EXHIBITION & FOYER 517

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CEO BREAKFAST (BY INVITATION ONLY)
HOSTED BY Hydro Québec
- 06:30 – 08:00
- LEVEL 7

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SPONSORED BY
- 06:45 – 08:00
- IN THE EXHIBITION

NETWORKING BREAKS (OPEN TO ALL)
(Times are subject to changes)
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- 15:30 – 16:00
- IN THE EXHIBITION

LUNCH (OPEN TO ALL)
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- 12:15 – 13:30
- IN THE EXHIBITION

ESPRESSO BAR (OPEN TO ALL)
SPONSORED BY
- 08:00 – 17:00
- IN THE EXHIBITION

COCKTAIL RECEPTION BUSINESS CASUAL (OPEN TO ALL)
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- 18:30 – 20:00
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GALA DINNER BUSINESS CASUAL (PRE-REGISTRATION REQUIRED)
Presentation of the 11 best overall Papers
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- 20:00 – 22:30
- PLENARY ROOM

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OCTOBER 2
THURSDAY

BREAKFAST (OPEN TO ALL)
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06:45 – 08:00
IN THE EXHIBITION

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15:30 – 16:00
IN THE EXHIBITION

LUNCH (OPEN TO ALL)
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12:15 – 13:30
IN THE EXHIBITION

ESPRESSO BAR (OPEN TO ALL)
SPONSORED BY AIEQ Association de l'industrie électrique du Québec

08:00 – 17:00
IN THE EXHIBITION

CLOSING SESSION CASUAL (OPEN TO ALL)
Award of the Best Papers Overall and Prize Draw

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17:30 – 18:30
PLENARY ROOM

NEXT GENERATION NETWORK (NGN) RECEPTION CASUAL (PRE-REGISTRATION REQUIRED)
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Award presentation of the 11 Best Student Papers

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MONDAY	06:30 – 21:00
TUESDAY	06:30 – 20:00
WEDNESDAY	06:30 – 23:30
THURSDAY	06:30 – 19:30

Program last updated on September 08, 2025. Papers, Titles and Speakers are subject to change at any time. **Latest updates available on the CIGRE 2025 APP.**

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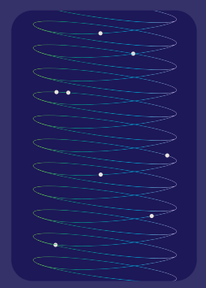

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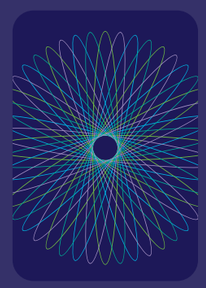

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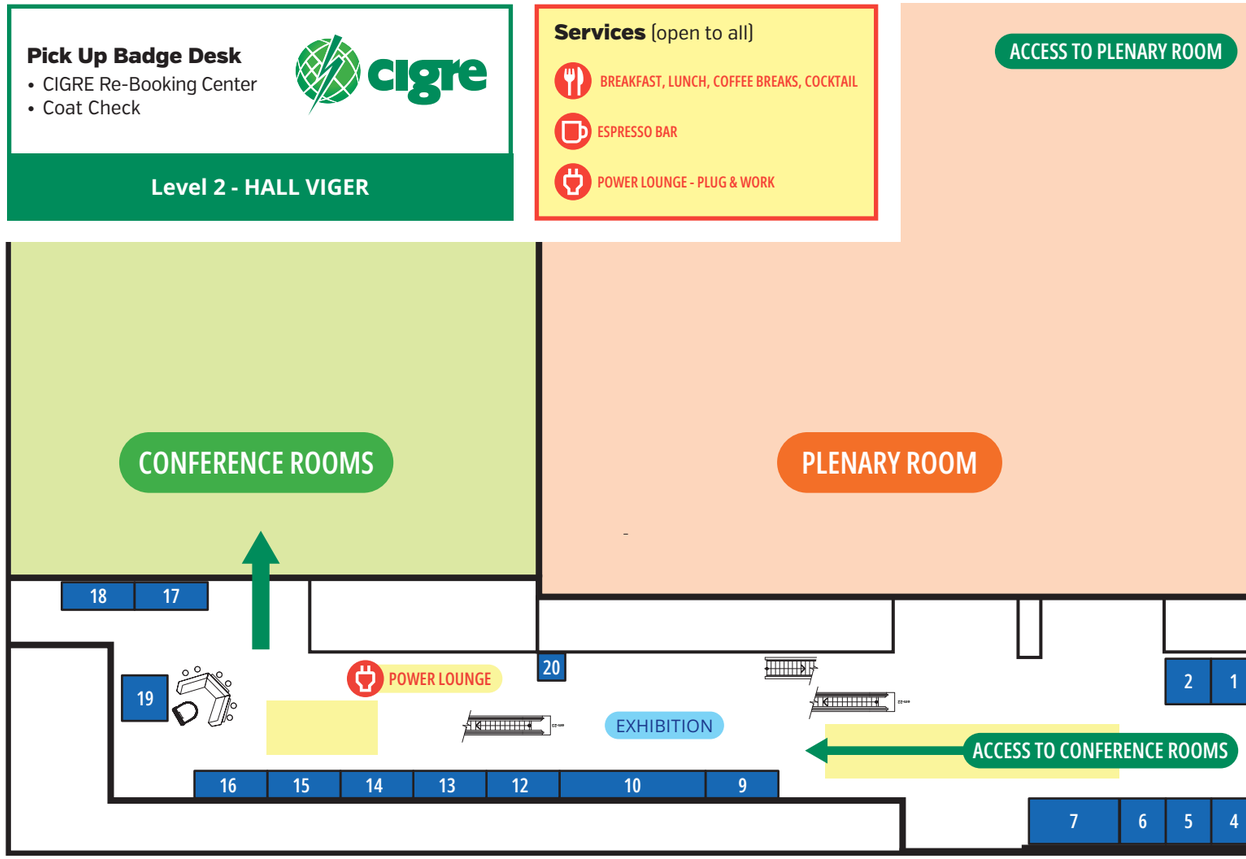

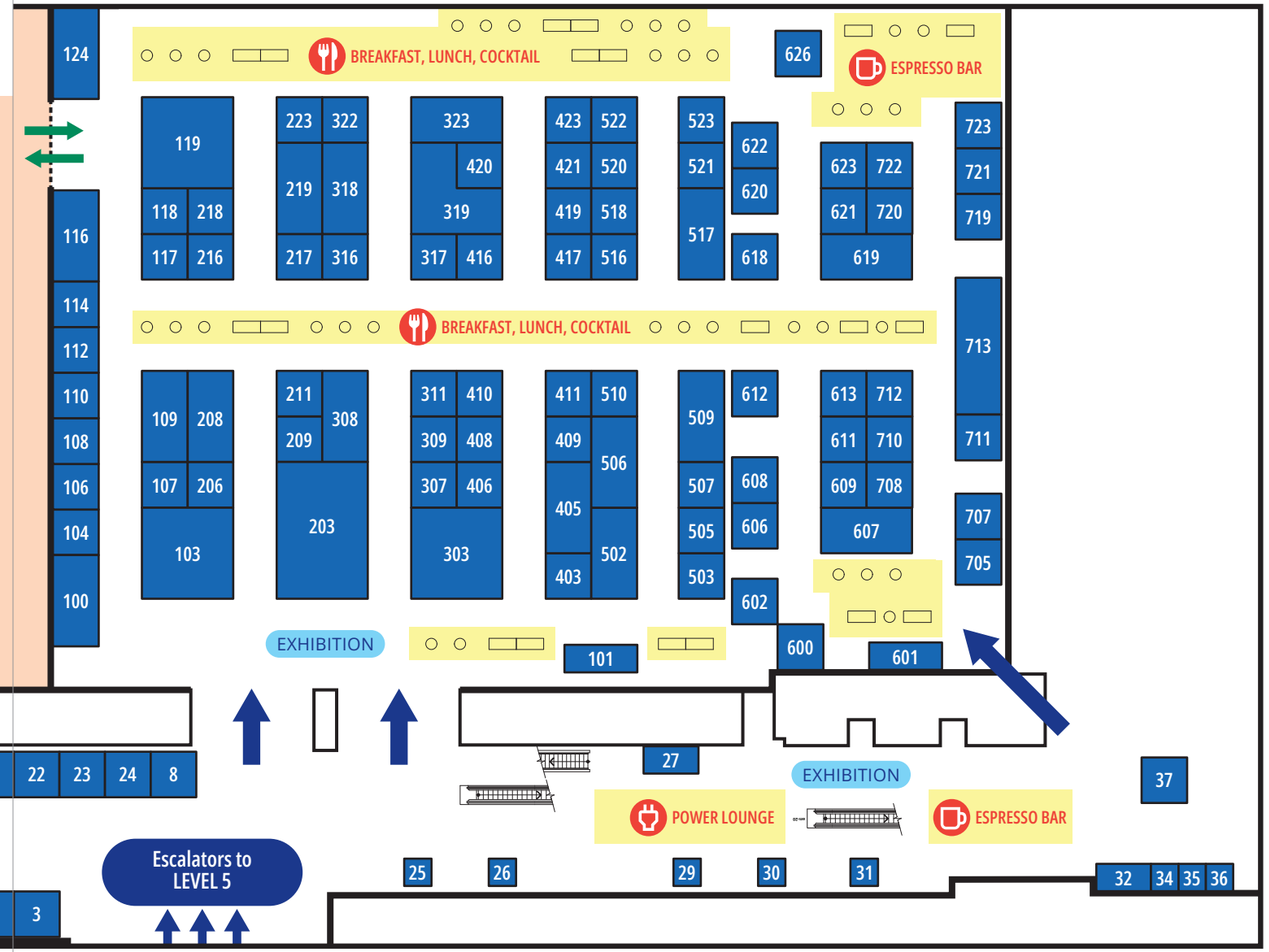

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COIL INNOVATION USA, INC.
125 Edinburgh So. Dr., Ste 201
Cary, NC
USA 27511
+1 919 279 5340
https://www.coilinnovation.com

BOOTH 3

COMEM SPA
SR 11, Località Signolo 22
Montebello Vicentino
Italy 34056
+39 3356668330
https://comem.com

BOOTH 14

CONDIS
Route de Montena 65
Rossens FR
Switzerland 1728
+41 26 411 85 00
https://condis.ch

BOOTH 110

CTC GLOBAL
2026 McGaw Ave
Irvine, CA
USA 92614
+1 949 428 8500
https://www.ctcglobal.com
BOOTH 409

DELTA STAR, INC.
3550 Mayflower Dr
Lynchburg, VA
USA 24501
+1 434 845 0921
https://www.deltastar.com
BOOTH 523

DELTA-X RESEARCH , INC.
PO Box 42083, RPO 2200 Oak Bay Avenue
Victoria, BC
Canada V8R 6T4
+1 1450 500 7978
https://www.deltaxresearch.com
BOOTH 507

DIGSILENT AMERICAS
16225 Park Ten Place, Ste. 605
Houston, TX
USA 77084
+1 737 484 1035
https://www.digsilentameicas.com
BOOTH 117

DOBLE ENGINEERING COMPANY
123 Felton Street
Marlborough, MA
USA 1752
+1 6179264900
https://www.doble.com
BOOTH 318

DRONE VOLT
14 rue de la Perdrix - Lot 201
Villepinte, France 93420
+33 180894444
https://www.dronevolt.com
BOOTH 124

DYNAMIC RATINGS
N56 W24879 N. Corporate Circle
Sussex, WI
USA 53089
+1 12623147808
https://www.dynamicratings.com
BOOTH 104

EEONLINE - EET&D MAGAZINE
Cp 50514 Carrefour Pelletier
Brossard, QC
Canada J4X 2V7
support@electricenergyonline.com
https://electricenergyonline.com

ELECTRICAL GRID MONTORING INC
9301 Oakdale Ave
Chatsworth, CA
USA 91311
+1 281 468 1633
https://www.egm.net
BOOTH 36

ELECTRICITY CANADA
275 Slater St
Ottawa, ON
Canada K1P 5H9
+1 16138091769
https://www.electricity.ca

ELEK SOFTWARE
L5, 11 York Street
Sydney, Australia 2000
+61 416940075
https://www.elek.com
BOOTH 13

ELIA GRID INTERNATIONAL
Boulevard de l'Empereur 20
Bruxelles, Belgium 1000
+32 022043801
https://www.eliagrid-int.com
BOOTH 708

EMSPEC INC.
904 Jacques Paschini
Bois-des-Filion, QC
Canada J6Z 4W4
+1 450 430 5522
https://www.empsec.com
BOOTH 601

EMTP
2120 Sherbrooke East
Montreal, QC
Canada H2K 1C3
+1 438 927 8775
https://www.emtp.com
BOOTH 112

ÉNERGIE CPG EST, INC.
365 rue St-Jean
Longueuil, QC
Canada J4H 2X6
+1 514 616 2016
https://www.compow.com
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ENGINEERED INTELLIGENCE, INC.
1232 9 Ave SE
Calgary, AB
Canada T2G 0T1
+1 905 691 4596
https://www.engineeredintelligence.com
BOOTH 608

ENLINE
R. Combatentes da Grande Guerra
Mirandela, Portugal 5370-339
+351 926120080
https://www.enline.energy
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Gaillan en Médoc, France 33340
+33 778638048
https://www.epsilon-cable.com
BOOTH 417

ERGON
2829 Lakeland Drive
Flowood, MS
USA 39282
+1 601 933 3000
https://www.ergonspecialtyoils.com
BOOTH 613

EXEL INTERNATIONAL
1845 rue Alfred-Nobel
Salaberry-de-Valleyfield, QC
Canada J6T 0E3
+1 514 222 3687
https://www.exelinternational.com
BOOTH 6

FABRIMET, INC.
4375 Boul. Saint-Joseph
Drummondville, QC
Canada J2B 1T8
+1 819 472 1164
https://www.fabrimet.com
BOOTH 423

FEDERAL PACIFIC
101 Goodson St.
Bristol, VA
USA 24201
+1 276 645 8962
https://www.federalpacific.com
BOOTH 32

FISO
500-195 ave St-Jean-Baptiste
Quebec, QC
Canada G2E 5R9
+1 418 688 8510
https://www.fiso.com
BOOTH 719

FRAUNHOFER IZM
Gustav-Meyer-Allee 25
Berlin, Germany 13355
+49 16095609678
https://www.astrose.de/en.html
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GE VERNOVA
650 Markland Street
Ontario, ON
Canada L6C 0M1
+1 518 727 6145
https://www.gevernova.com
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GRIDRAVEN
Telliskivi 57B - 1
Tallinn, Estonia 10412
+372 56996942
https://www.gridraven.com
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GRIMARD
830 route de Tadousac
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Canada G7H 5A8
+1 418 696 9000
https://www.grimard.ca
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H NU PTY LTD
4/10 Kirrawee Rd
Gosford, Australia 2250
+61 415849125
https://www.hnu.com.au
BOOTH 609

HEIMDALL POWER, INC.
214 W Tremont Ave
Charlotte, NC
USA 28203
+1 704 980 0439
https://www.heimdallpower.com
BOOTH 621

HIGHVOLT PRÜFTECHNIK DRESDEN GMBH
Marie-Curie-Straße 10, Übigau
Dresden, Germany 1139
+49 03518425600
https://www.highvolt.com
BOOTH 620

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HITACHI ENERGY
800 boul Hymus 5e étage
Montreal, QC
Canada H4S 0B5
+1 514 856 6266
https://www.hitachienergy.com
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HUBBELL POWER SYSTEMS
1850 Richland Ave East
Aiken, SC
USA 29801
+1 256 318 2488
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BOOTH 623

Hydro Québec

HYDRO-QUÉBEC
Édifice Jean-Lesage, 75, boulevard René-Lévesque Ouest
Montreal, QC
Canada H2Z 1A4
+1 514 385 7252
https://www.hydroquebec.com
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11642 Pyramid Drive
Odessa, FL
USA 33556
+1 727 376 5593
https://www.dilo.com/direct
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INNOVÉÉ
3, Place Ville-Marie, Suite 400
Montreal, QC
Canada H3B 2E3
+1 514 416 6777
https://innovee.quebec
BOOTH 510

INTEGRATED ENGINEERING SOFTWARE
1821 Wellington Avenue
Winnipeg, MB
Canada R3H 0G4
+1 204 632 5636
https://www.integratedsoft.com
BOOTH 15

IPS-ENERGY USA INC.
PO Box 332
Bargersville, IN
USA 46106
+1 317 422 4096
https://www.ips-energy.com
BOOTH 521

JIANGSU RYAN ELECTRIC CO., LTD.
No.229, Huanghai Ave West
Hai'an, China 226600
+86 51388699099
https://www.en.redq.cc
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K-LINE INSULATORS LTD
50 Passmore Avenue
Toronto, ON
Canada M1V 4T1
+1 416 292 2008
https://www.k-line.net
BOOTH 100

KINECTRICS
800 Kipling Avenue
Toronto, ON
Canada M8Z 5G5
+1 416 207 6000
https://www.kinectrics.com
BOOTH 502

KINGSINE ELECTRIC TECHNOLOGY
85 McMahon Dr
Toronto, ON
Canada M2K 0H1
+1 647 707 9669
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BOOTH 711

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LAKI POWER EHF.
Vatnagarðar 14
Reykjavik, Iceland 104
+354 7873890
https://www.lakipower.com
BOOTH 5

LINEVISION
529 Main St, Suite 307
Boston, MA
USA 02129
+1 650 739 6677
https://www.linevisioninc.com
BOOTH 217

MACLEAN POWER SYSTEMS
225 Boulevard Ford
Chateauguay, QC
Canada J6J 4Z2
+1 438 467 1553
https://www.macleanpower.com
BOOTH 520

MEASUREMENTS INTERNATIONAL
118 Commerce Drive
Prescott, ON
Canada K0E 1T0
+1 613 925 5934
https://www.mintl.com
BOOTH 31

MEGGER
550 alden rd
Markham, ON
Canada L3R 6A8
+1 647 324 9634
https://www.megger.com/en-ca
BOOTH 107

MINDCORE TECHNOLOGIES
2425 Edouard Michelin
Terrebonne, QC
Canada J6Y 4P2
+1 450 477 5959
https://www.mindcoretech.com
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530 Keystone Drive
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USA 15086
+1 724 612 4716
https://www.MEPPI.com
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Nanjing, China 210038
+86 2585372050
https://www.nanjingelectric.com
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Nanyang City, Henan Province
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https://www.world-fairs.org

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via fratellli gracchi 39
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Canada V3N 4V1
+1 604 345 5670
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Toronto, ON
Canada M2J 4R3
+1 800 664 2766
https://www.omicronenergy.com

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OPAL-RT TECHNOLOGIES
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https://www.opal-rt.com

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USA 30303
+1 770 632 6700
https://www.osmose.com

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219 Westbrook Rd
Ottawa, ON
Canada K0A 1L0
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https://www.ozoptics.com

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1600, 46E Avenue
Lachine, QC
Canada H8T 3J9
+1 416 414 5911
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POWELL
2755 Bd Pitfield
Montreal, QC
Canada H4S 1T2
+1 514 979 8468
https://www.powellind.com

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POWER ENGINEERS
1032 S Silverstone Way
Meridian, ID
USA 83642
+1 208 788 0588
https://www.powereng.com

BOOTH 17

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Surrey, BC
Canada V3W 7R7
+1 604 598 5116
https://powertechlabs.com

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1155 rue Metcalfe, Suite 150
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Canada H3B 2V3
+1 514 962 6146
https://www.PPCInsulators.com

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Pointe-Claire, QC
Canada H9R 1E2
+1 514 953 7434
https://www.primaxpower.com

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Ettlingen, Germany 76275
+49 7243762430
https://www.primtech.com

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Canada R3T 0l7
+1 204 781 0387
https://www.ptitransformers.com

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PWC CANADA
PwC Tower, 18 York Street
Toronto, ON
Canada M5J 0B2
+1 416 779 3391
https://www.pwc.com/ca

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Fairport, QC
Canada 14450
+1 418 262 1002
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https://www.raptronics.ca

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Canada J4Y 0E4
+1 514 370 5372
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USA 77338
+1 302 339 7055
https://www.rspoles.com

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Brookline, MA
USA 02445
+1 978 761 7289
https://rhmintl.com

BOOTH 37

RTDS TECHNOLOGIES, INC.
150 Innovation Drive
Winnipeg, MB
Canada R3T 2E1
+1 204 594 9711
https://www.rtds.com

BOOTH 317

RUGGED MONITORING
1415 Frank Carrle St.
Quebec City, QC
Canada G1N 4N7
+1 226 507 3883
https://www.ruggedmonitoring.com

BOOTH 218

SAVOIR-FAIRE LINUX
7275 rue Saint-urbain
Montreal, QC
Canada H2R 2Y5
+1 514 814 0428
https://savoirfairelinux.com/fr

BOOTH 307

SBB TOWERS
10 rue Émilien-Marcoux
Blainville, QC
Canada J7C 0B5
+1 450 970 3055
https://www.sbb.ca

BOOTH 606

SECUCONTROL, INC.
4721A Eisenhower Avenue
Alexandria, VA
USA 22304
+1 703 838 7677
https://www.secucontrol.com

BOOTH 602

SEDIVER
378 McArthur
Saint Laurent, QC
Canada H4T 1X8
+1 514 793 4490
https://www.sediver.com

BOOTH 308

SEL SCHWEITZER LABORATORIES INC. AND SCHWEITZER ENGINEERING LABORATORIES, INC.
2350 NE Hopkins Court
Pullman, CT
USA 99163-5600
+1 509 592 5804
https://www.selinc.com

BOOTH 25

SHANDONG TAIKAI HIGH VOLTAGE SWITCHGEAR CO., LTD
Longteng Rd, High-tech Development Zone,
Tai'an, China 271000
+86 5388939139
https://en.sdtaikai.com

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SHANGHAI HUAMING POWER EQUIPMENT CO., LTD.
NO.977 TONGPU ROAD PUTUO DISTRICT
SHANGHAI
Shanghai, China 200333
+86 15921012087
https://www.huaming.com

SHELL MIDEL
Hibernia Way, Trafford Park
Manchester, United Kingdom
M32 0ZD
+44 0747 700 9991
https://www.midel.com

BOOTH 116

SHEMAR T&D SOLUTIONS
1661 International Drive Suite 350
Memphis, TN
USA 38120
+86 15105114110
https://www.shemar.com.cn

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SICAME-ENERGIE
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Saint-Hubert, QC
Canada J3Z 1G8
+1 450 679 7778
https://sicame-energie.com

BOOTH 19

SIEMENS CANADA LTD
1577 North Service Road East
Oakville, ON
Canada L6H 0H6
+1 365 996 2072
https://www.siemens.ca

BOOTH 713

SIEMENS ENERGY CANADA LTD
1577 North Service Rd E
Oakville, ON
Canada L6H 0H6
+1 289 681 3370
https://www.siemens-energy.com

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Dallas, TX
USA 75024
+1 470 317 0330
https://en.sieyuan.com

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145 Roy Boulevard
Brantford, ON
Canada N3K 7K1
+1 519 758 8888
https://www.slacan.com

BOOTH 403

SOCIÉTÉ GÉNÉRALE D'ÉLECTROTECHNIQUE
500 Rue du Platine, Québec
Québec, Québec, QC
Canada G2N 2G6
+1 418 932 4433
https://groupesge.ca/contact-2

BOOTH 600

STANTEC
325 25 St SE Suite 200
Calgary, AB
Canada T2A 7H8
+1 403 207 8911
https://www.stantec.com

BOOTH 705

STRATATEK TEST & MEASUREMENT
101 Amber St
Markham, ON
Canada L3R 3B2
+1 905 406 0100
https://www.stratatek.com

BOOTH 712

STRUCTURAL COMPOSITE TECHNOLOGY LTD
200-100 Hoka Street
Winnipeg, MB
Canada R2C 3N2
+1 204 668 9320
https://www.sctfrp.com

BOOTH 612

www.SUBNET.com

SUBNET SOLUTIONS, INC.
110, 916 42 Avenue SE
Calgary, AB
Canada T2G 1Z2
+1 587 794 4958
https://subnet.com

BOOTH 626

SWEDISH NEUTRAL
Mätarvägen 12
Kungsängen, Sweden 19637
+46 0705800053
https://www.SwedishNeutral.se

BOOTH 721

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6889 Rexwood Road - Unit 9
Mississauga, ON
Canada L4V 1R2
+1 289 562 0126
https://www.systemswithintelligence.com

BOOTH 12

TAG CORPORATION
No. 91 Thiruneermalai Road
Chennai, India 600044
+91 9884030702
https://www.tagcorporation.net

BOOTH 416

TCI+
2075 Bd Fortin
Laval, QC
Canada H7S 1N4
+1 514 434 6847
https://www.tciplus.ca

BOOTH 109

TRANSGRID SOLUTIONS
100-78 Innovation Drive
Winnipeg, MB
Canada R3T 6C2
+1 204 509 0481
https://www.transgridsolutions.com

BOOTH 23

TRENCH GROUP
71 Maybrook Dr.
Scarborough, ON
Canada M1V 4B6
+1 416 298 8108
https://trench-group.com

BOOTH 411

VERDYN
Waterfront Innovation Centre, 155
Queens Quay East
Toronto, ON
Canada M5A 0W4
+1 587 226 1010
https://www.verdyn.ca

BOOTH 522

VIZIMAX, INC.
2284 DE LA PROVINCE ST
Longueuil, QC
Canada J4G 1G1
+1 450 679 0003
https://www.vizimax.com

BOOTH 707

WSP
+1 514 340 0046
https://www.wsp.com/en-gl

BOOTH 17

XEOS IMAGING, INC.
1405 Bd du Parc Technologique bureau 270
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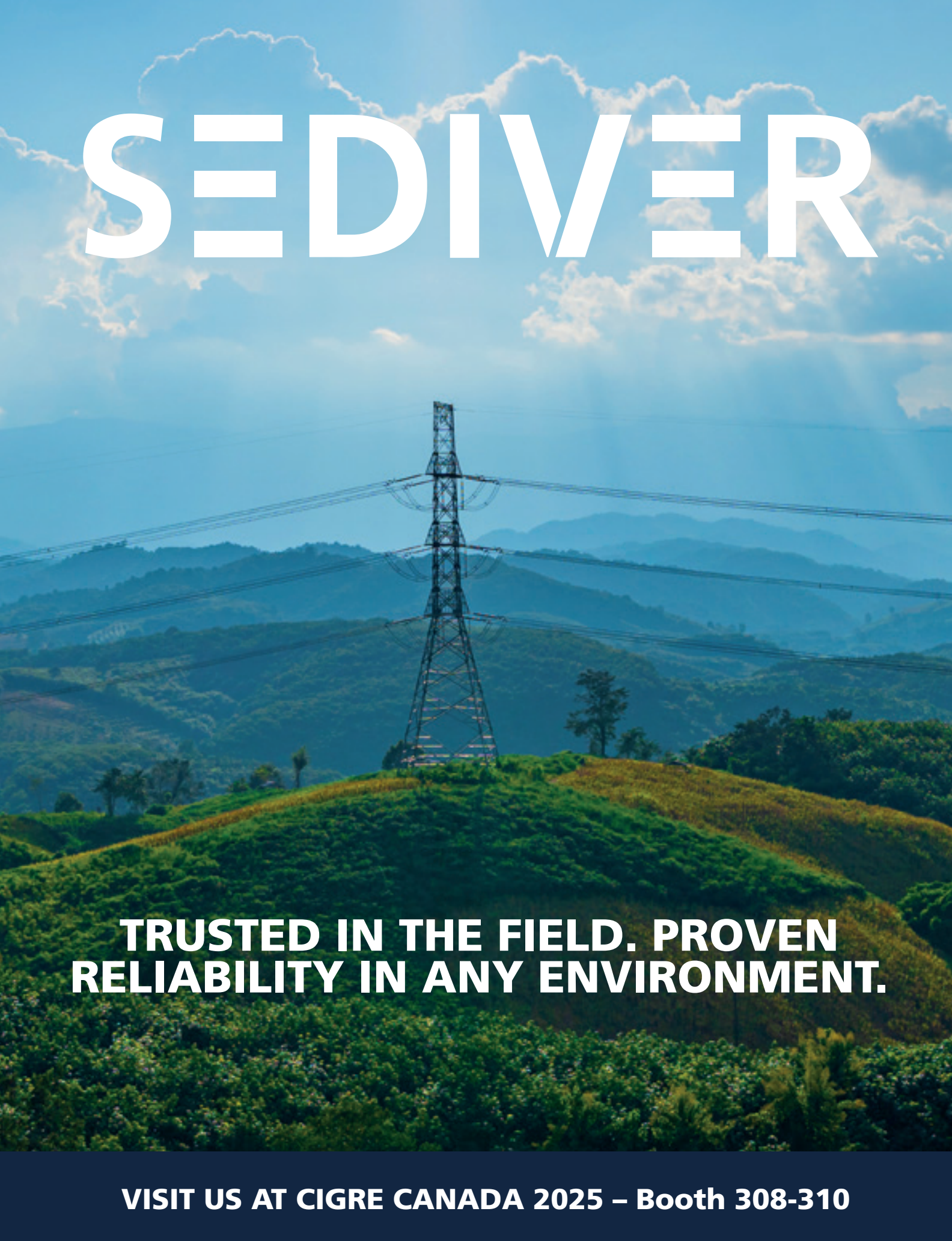
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