

Grounding & Lightning

Stations

Joint Conference October 12-13, 2021

Event Overview for Grounding & Lightning

Grounding and lightning issues continue to be an important area of development for the electrical utility industry. New and better ways to design, construct, and test grounding and lightning protection systems are continuously being developed to meet evolving industry demands. The 13th Annual Grounding & Lightning Conference is an open forum for information exchange, technical presentations, and training. Discussions and presentations will cover grounding and lightning topics applicable to all areas of electric power systems.

The event will feature presentations on the following themes:

- Lightning Protection & Performance
- Station Grounding
- Personal Protective Grounding (PPG)
- Distribution & Transmission System Grounding
- Copper Theft
- Pipelines in Proximity to Electrical Power Lines and Structures

Event Overview for Stations

The 2021 Stations Conference: Developing Processes and Leveraging Data to Mitigate System Risk will explore methods by which to leverage equipment data and develop processes to help mitigate system risk, improving efficiency, safety, and reliability of operation.

The event will feature presentations on the following themes:

- Innovation & Design
- Maintenance Practices
- Condition Assessment & Monitoring
- Risk Management

Who Should Attend?

- Electric Utilities
- Consultants
- Equipment Vendors
- Research Facilities and Laboratories
- Academics

This event is supported by the following member utilities:



To register and for more information, visit <https://www.ceati.com/stationsgl2021/>

Grounding & Lightning - Stations Day 1: October 12, 2021

10:30 - 12:00 Session 1 - Welcome and Opening Remarks

10:30 **CEATI Welcome and Introduction**

Moderated by Richard O'Callaghan, SEP Technical Advisor & John Williamson, GLP Technical Advisor, CEATI International
CEATI International

11:00 **Lightning Detection and Mitigation in North America**

Brooke Pearson, Vaisala (USA)

11:30 **Continuous Improvement - An Implementation Approach**

Kenneth R. Bridge, DTE Energy (USA)

12:00 - 12:30 Break

12:30 - 2:30 Session 2 - Grounding & Lightning and Stations Joint Session

Session Co-Chairs: Richard O'Callaghan & John Williamson, CEATI International

12:30 **Grounded for Life? Verifying the Safety of Aged Ground Grids**

Lee Howard, Hood Patterson & Dewar (USA)

1:00 **Demonstration of Station Integrity Testing using the CS3 Continuity Meter**

Bryan Beske & Keith Wallace, Safearth (USA)

1:30 **Standards for the Electrical Grounding and Bonding of Substation Perimeter Fences**

Martin Havelka, NVent Erico (USA)

2:00 **Foot to Ground Impedance - Magic Bullet or What?**

Bill Carman, BC2 (Australia)

2:30 - 3:00 Grounding & Lightning and Stations Joint Networking Break

Lead by Babak Jamali, METSCO Energy Solutions (Canada)

A small virtual breakout room will be available for those who wish to network with other conference attendees.

3:00 - 5:00 Session 3A - G&L: Transmission & Distribution System Grounding

Session Chair: John Billo, Nashville Electric Service, (USA)

3:00 **Practical Experience with State-of-the-Art Monitoring of Surge Arresters**

Philipp Raschke, Tridelta Meidensha (Germany)

3:30 **What to Do When the Electricity Spills Out Across the Suburb?**

Bill Carman, BC2 (Australia)

4:00 **Sectionalized OPGW use on Transmission Lines**

Cristian Militaru, Power Engineers Inc (USA)

4:30 **Challenges in Obtaining Reliable Soil Information for Substation Ground Grid Design: Selecting an Appropriate Soil Resistivity Traverse in Proximity of Metallic Interferences**

Ehsan Azordegan, Kinectrics (Canada)

3:00 - 5:00 Session 3B - Stations: Technology Application for Equipment Maintenance

Session Chair: Philippe Webster, Hydro Ottawa

3:00 **Dynamic Monitoring & Evaluation of Substation Assets**

Robert Otal & Travis Squires, METSCO Energy Solutions (Canada)

3:40 **Using Integrated Mobile Online DGA Monitoring to Identify and Resolve Substation Transformer Issues**

Lee Doyle & Mark Gross, Valsala Oyj (USA)

4:20 **How Tomorrow's Gas Quality Can Be Detected Today**

Rafael Derencio & Katja Hinz - WIKA (Canada)

5:00 - 5:30 G&L Networking Break

Lead by Babak Jamali, METSCO Energy Solutions (Canada) & Peter Dick, Electric Power

5:00 - 5:30 Stations Networking Break

A small virtual breakout room will be available for those who wish to network with other conference attendees.

5:30 - 6:45 Session 4A - G&L: Personal Protective Grounding

Session Chair: Gary Zevenbergen WAPA

5:30 **Personal Protective Grounding for Wood Pole Transmission Lines**

Hamed Ahmadi, Chandan Singh & Jeremy Leal, BC Hydro (Canada)

6:00 **Induced Voltage Calculation of Multiple Cables**

Yichen Bi & Haijun Liu, ETAP (USA)

5:30 - 6:45 Session 4B - Stations: Benchmarking Maintenance Practices

Session Chair: Richard O'Callaghan, CEATI International

5:30 **Station Equipment Benchmarking for Inspections, Maintenance, and Lifecycle Replacement**

Brandon Stephens & Jeff Rhyne, Duke Energy (USA)

6:00 **Panel Discussion**

Paul Gheorghe, FortisBC, Najmus Saltanat, ENMAX & Pete Carhart, Oncor

6:30 - 7:00 G&L Networking Break

Lead by Jens Schoene, Enernex (USA)

All times are in Eastern Daylight Time - Agenda is subject to change without notice.

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Grounding & Lightning - Stations Day 2: October 13, 2021

10:30 - 12:30 Session 5A - G&L: Lightning Protection & Performance

Session Chair: John Williamson, CEATI International

- 10:30 **TNB's Experience with Line Surge Arresters**
Noradlina Abdullah, Tenaga Nasional Berhad (Malaysia)
- 11:00 **Improving Power System Surge Protection Using EGLA Arresters**
Jonathan Woodworth, ArresterWorks (USA)
- 11:30 **A Parametric Analysis of Design Variables on Transmission Line Lightning Performance**
Griet Devriese, Power Engineers Inc & Jordan Ellis, AEP (USA)
- 12:00 **Identifying the Compound Strike, Arguably the Most Damaging Lightning Event Impacting Electric Infrastructure**
Brooke Pearson, Vaisala (USA).

12:30 - 1:00 G&L Networking Break

Lead by Bill Chisholm, IEEE, CIGRE (Canada) & Jonathan Woodworth, Arresterworks (USA)

1:00 - 3:00 Session 6A - G&L: Substations

Session Chair: Andrew Meikle, OPG

- 1:00 **Measuring the Resistivity of Crushed Rock in Existing HV Stations**
Ken Atkinson, ESB (Ireland) & Robert Southey, Safe Engineering Services (Canada)
- 1:30 **A Utility Approach in the Application of IEEE Std 80 Protection Clearing Time Decision for Substation Grounding Design and Study**
Ginette Kowerko, Manitoba Hydro (Canada)
- 2:00 **Collection Volume Method as a Means of Lightning Protection for Substations**
Andrew Ritosa, nVENT ERICO (USA)
- 2:30 **Earth Resistivity and Grounding Design: A Brief history and the Missing Link**
Bill Tocher, Safeearth (Australia)

3:00 - 3:30 G&L Networking Break

Lead by Peter Dick, Electric Power Diagnostics (Canada) & Emmanuel Petrache, Kinectrics (Canada)

3:30 - 5:20 Session 7A - G&L: Pipelines and Transmission & Distribution Lines

Session Chair: Hamed Ahmadi, BC Hydro

- 3:30 **Impact of Soil Resistivity Measurement Traverse Length on Validity of AC Interference Studies: Fault Conditions**
Majid Siahraang, Power Engineers Inc (USA) & Robert Southey, Safe Engineering Service (Canada)
- 4:10 **Mitigating Interference on Cathodically Protected Pipelines**
Ivan Grobbelaar, DEHN(South Africa) & David Lewis, EasyPower (USA)
- 4:40 **Minimizing HVAC Interference on Pipelines through Transmission Line Design Optimization**
David Kemp, DNV (USA)

5:20 - 5:45 G&L Networking Break

Lead by Mike Ames, Corrground Consulting LLC (USA) & Clay Brelsford, Bass Engineering (USA)

5:45 - 6:30 Session 8 - Grounding & Lightning and Stations Closing Remarks

- 5:45 **Conference Wrap-up and Future Plans**
Richard O'Callaghan & John Williamson, CEATI International
- 6:15 **Closing Remarks**

10:30 - 12:30 Session 5B - Stations: Development of Design and Capital Management Processes

Session Chair: Sameh Al-Eryani, ENMAX Power Corporation

- 10:30 **Using Value-Based Decision Making to Align Capital Planning with Strategic Priorities in Transmission and Distribution Organizations**
Sherif Farghal, Pyramid Consulting (USA)
- 11:10 **Capital Planning Using Asset Risk Models**
Brian Dewan & Guy Druce, Copperleaf (Canada)
- 11:50 **Taking 3D Substation Design to the Next Level with BIM**
Andrew Bellinghausen & Paul Somboonyanon, Burns & McDonnell

12:30 - 1:00 Stations Networking Break

A small virtual breakout room will be available for those who wish to network with other conference attendees.

1:00 - 3:00 Session 6B - Stations: Condition Assessment

Session Chair: Philippe Webster, Hydro Ottawa

- 1:00 **Changing Requirements for Station Equipment**
Doug Houseman, Burns & McDonnell (USA)
- 1:40 **Maintenance Practice for Northern Region Strengthening Scheme-XXIX (NRSS-29)**
Amit Mahajan, Sandeep Choudhury & Sandip Maity, Sterlite Power (India)
- 2:20 **Station Battery Condition Assessment for NERC PRC005-02 Compliance Using Automated Remote Monitoring Technology**
Sadia Mahboob & Richard Guo, Powertech Labs(Canada)

3:00 - 3:30 Stations Networking Break

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3:30 - 5:20 Session 7B - Stations: Case Studies in Non-Wire Alternatives

Session Chair: Steve Pailer, Seattle City Light

- 3:30 **Fort Chipewayon Microgrid Solar and Battery Integration**
Alexandre Nassif & Hesam Yazdanpanahi, ATCO Electric (Canada)
- 4:10 **Non-Wires Alternatives in the Big Apple**
Michael Coddington, National Renewable Energy Laboratory (USA)
- 4:40 **Moderated Discussion**

5:20-5:45 Stations Networking Break

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