

Conference Agenda

10th Annual Grounding & Lightning Conference

**October 2-3, 2018
Anaheim, CA**

1.514.866.5377 • events@ceati.com • www.ceati.com

Register online at www.ceati.com/GL2018

Conference at a Glance

OVERVIEW

Grounding and lightning issues continue to be an important area of development for the industry. New and better ways to design, construct, and test grounding and lightning protection systems are continuously being developed in order to meet higher standards and changing industry demands. This conference is an open forum for information exchange, technical presentations, and training. Six overarching themes will be addressed through the discussion of ideas and experiences to benefit attendees and the industry as a whole.

Supported by over 30 participating utilities, the Annual Grounding and Lightning Conference brings together leading subject matter experts from around the world while providing an exceptional opportunity for networking with consultants, manufacturers, and representatives from electric utilities.

THEMES

1 **Lightning Protection and Performance**

Both lightning protection and the performance of electric utility systems are important to electrical utilities. This includes the safety of people and equipment, response to outages, as well as the prediction and location of lightning events.

2 **Copper Theft**

Copper theft from utility grounding systems is a critical issue for utilities. Prevention methods and techniques, including alternative conductors and installation methods, are of primary interest. Other aspects of copper theft include utility experiences, as well as the risk to infrastructure both now and in the future, particularly since the price of copper is expected to increase significantly in future years.

3 **Personal Protective Grounding**

The Personal Protective Grounding (PPG) presentations discuss current practices and methods, which are extremely important to ensuring the safety of utility workers, the general public, and valuable equipment.

4 **Transmission & Distribution Grounding**

All aspects of grounding, on both the Distribution and Transmission systems, are important to utilities. Some of the current issues discussed include: neutral isolation devices used on the distribution system; grounding in high resistivity and/or mountainous areas; distribution system grounding methods and standards; low voltage system grounding; transmission line switch grounding; stray voltage on the distribution system; induced voltage on fences in powerline right-of-ways; current splitting under fault conditions between substations; and distribution neutral ground systems.

5 Highlighted Topics: Recently Completed Work within CIGRE Committees
The International Council on Large Electric Systems (CIGRE) is an international organization dedicated to the development of the power supply sector through the identification and development of solutions to industry issues. More than 3,500 experts from across the globe actively collaborate in structured work programs with CIGRE through 16 Study Committees. This session will feature two CIGRE members who will present on their recent findings from two working groups, along with an extended question and answer session to discuss their recent work.

6 Substation Grounding
The proper design, construction, and testing of substation grounding systems will be discussed in these presentations, along with the software used for grounding system design and the equipment used in testing. Ground potential rise along with step/touch and transferred voltages under electrical ground fault conditions must be ensured during both normal operating conditions and during station construction activities. Maintenance practices, frequency, and prioritization are important discussion topics. The risk of error resulting in unsafe conditions, both inside and outside the substation, is a concern for grounding engineers.



Grounding & Lightning Day 1

October 2, 2018

7:30-8:20 Registration & Breakfast

8:20-8:30 **Opening Remarks & Welcome Address** *John Williamson, CEATI International*

Session 1: Lightning Protection & Performance - Catalina B & C

8:30-9:00 **Organizing the Seven Best Practices for Lightning Protection of Transmission Lines** *William A. Chisholm, METSCO*

9:00-9:30 **Lightning at ATC** *Bryan Beske, ATC*

9:30-10:00 **Performance & Revenue Enhancements Utilizing Line Surge Arresters** *Ryan Freeman, Hubbell Power Systems Inc.*

10:00-10:30 Break

10:30-11:00 **Arrester Surface Temperature Measurement Considerations** *Jonathan Woodworth, ArresterWorks*

11:00-11:30 **Precision Assessment of Power Line Response to Lightning** *Kenneth Cummins, University of Arizona*

11:30-12:00 **Questions & Discussion - Lightning Protection & Performance**

12:00-1:15 Lunch

Session 2: Copper Theft - Catalina B & C

1:15-1:45 **CuTS Technology for Monitoring Grounding Infrastructure - A Customer's Experience** *Simon Nash, Cresatech (UK)*

1:45-2:15 **Mitigating Copper Theft with Stainless Steel** *Jean Paul Combeau, Electricos International (Columbia)*

2:15-2:45 **Utilities' Experiences with Copper Theft** *TBC*

2:45-3:00 **Questions & Discussion - Copper Theft**

3:00-3:30 Break

Agenda is subject to change without notice.

Grounding & Lightning Day 1

October 2, 2018

Session 3: *Personal Protective Grounding* - Catalina B & C

3:30-4:00	Grounding Methods when Working on De-Energized T&D Lines	<i>Aram Khalil-Pour, FortisBC & Scott Nosal, Bonneville Power Administration</i>
4:00-4:30	Zero Gradient Grounding Plate	<i>Joe Szwelnis & Joe Andreyo, Cleveland Price Inc.</i>
4:30-5:00	Safety Grounding - Where is the Big Picture?	<i>Keith Wallace, Safearth (Australia)</i>
5:00-5:15	Questions & Discussion - Personal Protective Grounding	

6:00-7:30 Reception



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Grounding & Lightning Day 2

October 3, 2018

7:30-8:15 Breakfast

Session 4: Transmission & Distribution Grounding Sessions

Session 4A: Transmission Grounding - Catalina A

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| 8:15 | Soil Resistivity Testing
<i>Emanuel Petrache, Kinectrics</i> |
| 8:45 | Lessons Learned from a Shield Wire Failure on a 60 kV River-Crossing Span
<i>Nariman Roshandel Tavana, BC Hydro</i> |
| 9:15 | Testing and Modeling Grounding Systems for Geomagnetic Data
<i>John Williamson, CEATI International</i> |
| 9:45 | Questions & Discussion - Transmission Grounding |

Session 4B: Distribution Grounding - Catalina C

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|------|---|
| 8:15 | IEEE 1695 Stray and Contact Voltage Working Group Update
<i>Matthew Norwalk, Southern California Edison</i> |
| 8:45 | ConduDisc: The Corrosion Proof Grounding Plate
<i>Kris Cox & Todd Sirola, SAE Inc</i> |
| 9:15 | Distribution Lightning Protection
<i>Jonathan Woodworth, ArresterWorks</i> |
| 9:45 | Questions & Discussion - Distribution Grounding |

10:00-10:30 Break

Session 5: Highlighted Topics: Recently Completed Work within CIGRE Committees

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| 10:30-11:30 | Ground Potential Rise at Overhead AC Transmission Line Structures during Power Frequency Faults: CIGRE Technical Brochure TB 694

<i>Abstract: The consequence of potential safety hazards from touch, step, and transferred voltages due to Ground Potential Rise (GPR) must be well understood. This presentation examines the source of the problem, i.e., ground current from a line fault and a line grounding system that is sensitive to soil resistivity. Safety risk mitigation may require stringent measures, and should be designed to ensure any potential hazards are kept to acceptable levels.</i> | <i>William A. Chisholm & George Watt, CIGRE Working Group B2.56</i> |
| 11:30-12:00 | Quantified Risk Analysis in Managing Power System Grounding Shock Risk - CIGRE B3:35 W/G Recommendations and Australian Experience

<i>Abstract: This presentation will examine the recently released findings of the CIGRE/CIREC working group B3:35, and will use practical examples to review the application of QRA-based processes within Australia over the last 20 years.</i> | <i>Bill Carman, Bill Carman Consulting (Australia)</i> |

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Grounding & Lightning Day 2

October 3, 2018

12:00-1:00 Lunch

Session 5: Highlighted Topics: Recently Completed Work within CIGRE Committees (cont.)

1:00-1:45 **Group Discussion - Recently Completed Work within CIGRE Committees**

Session 6: Substation Grounding - Catalina B & C

1:45-2:15 **Substation Grounding Design Challenges and Lessons Learned**

*Eric Swenson,
Ulteig Engineers Inc.*

2:15-2:45 **Sea Effects on Grounding Systems - an Analytical and Numerical Study**

*Roberto Andolfato,
SINT Ingegneria (Italy)*

2:45-3:15 Break

3:15-3:45 **Air-Core Reactors - Magnetic Clearances, Electrical Connections, and Grounding of Supports**

David Caverly, Trench

3:45-4:15 **Grounding System Management through Clearer Understanding and Effective Testing**

*Stephen Palmer, Safearth
(Australia)*

4:15-4:45 **Challenges with Inheriting Old Substations Built to Old Design Standards**

*David Lewis,
POWER Engineers*

4:45-5:00 **Questions & Discussion - Substation Grounding**

5:00-5:15 **Closing Remarks**

*John Williamson,
CEATI International*

Thank you to our sponsors!



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Thank You to Our Grounding & Lightning Program Members!



Grounding & Lightning Conference

October 2 - 3, 2018 • Anaheim, CA

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Registration Fees & Discounts

Register by June 29th, 2018 and save \$50

- \$965 USD Standard Registration
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*GLIG participating organizations may be eligible for a complimentary registration - contact your Program Coordinator for more information

Exhibit at the Grounding & Lightning Conference!

- \$3500 USD Silver Sponsor Booth (2 passes)
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For Exhibitors: All cancellations received 60 days prior to the event will be subject to a processing fee of 25% of the total amount. There will be no refunds granted after this date. Delegate substitution is permitted at no extra cost. Exhibitor registration and additional conference passes include proceedings package, access to the presentation room, breakfast, breaks, lunches, and reception where indicated on the schedule.

Important Information

Registration fees include proceedings package, breakfast, breaks, lunches and reception where indicated on the schedule.

- Please check if you wish to be contacted about allergies or other dietary requirements.

Prices are in USD. Charges will appear as 'CEATI International Inc' and are subject to applicable taxes and fees. All cancellations received at least 60 days prior to event will be subject to a \$200 processing fee. There will be no refunds granted after this date. Delegate substitution is permitted at no extra cost. Please note that all names registering for the event will be added to CEATI's mailing list. If you do not wish to be included in this electronic outreach, please click on the 'unsubscribe' button in the email to remove yourself. In the spirit of industry networking, your email may be shared with other conference participants. If you do not wish to have your email shared, please contact us at events@ceati.com. By attending, you acknowledge that there may be photographs or videos taken of you during this event, and you consent to the use of these photographs or videos in future CEATI communications.

All conference guests are eligible for a preferred rate of \$154 USD a night subject to availability. To receive this rate, please mention the special convention rate for the CEATI International conference. Preferred rate only available until August 23, 2018.