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The TJCAA Quarterly

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IEEE Seminar— The Team Gets Up to Date

The Team Gets Up to Date at the IEEE OEB IAS Seminar on Grounding and Ground Fault Protection



Back (left to right): Paul Giorsetto, Sean Ferguson, Joseph Martell, Alec MacLean, Andrew Calma.
Front (left to right): Jacqueline Arama, McKenzie Campagna, Eileen Nakamura, Anne Broughton, Isabel Huang.

The first presentation addressed why grounding is so important (accompanied by a helpful graphic illustrating the hazards of touch/step potentials to an engineer), along with key industry standards and recommendations, an overview of the components and functions of a grounding system, and NETA testing specifications. All attendees received a copy of the 13th Edition of *Soars Book on Grounding and Bonding*.

Our team was then invited into the nitty gritty of grounding with the second presentation, which focused on the objectives of ground grid design, including providing grounding for lightning impulses and surges; construction and design methods; and design tips, such as the fact that opting to increase the area is more effective than adding an additional conductor to reduce grid resistance.

“Grounding Recommendations for On-Site Power Systems” included a deep dive into the importance of knowing the difference between equipment grounding vs. system grounding.

Equipment grounding:

- Establishes a conductive path between normally non-current carrying metal parts of equipment and between these parts and the grounding electrode
- Earth connected to: non-current carrying parts
- Protect personnel

This year’s seminar was jam-packed with valuable information for our Electrical and CSP Engineers. Centered around the fundamentals of grounding, bonding, and ground fault protection, the topics for the day included:

1. Electrical System Grounding
2. Groundgrid Design & Electrical Shock Calculation
3. Grounding Electrode Systems and Service Grounding
4. Grounding Recommendations for On-Site Power Systems
5. Generator Stator Ground Fault Protection
6. Distribution Feeder HIF Fault Analysis and Mitigation

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System grounding:

- Deliberate connection between a circuit conductor of a power source and ground (earth)
- Earth connected to: current carrying parts
- Protect equipment

After an in-depth discussion on generator stator ground fault protection, the group closed out the day with testing, findings, and mitigation strategies for HIFs (high-impedance faults) on distribution feeders, where

they looked at main distribution system configurations (Four-Wire Multi-Grounded System Grounding Configuration and Three-Wire System Grounding Configuration) and emphasized the importance of understanding various HIFs and characterizing them for algorithm development.

The seminar was a great success, and our team left with valuable tools and a greater understanding of industry challenges and key considerations for grounding and bonding in all phases of design.

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