



Safety Measures ^{ELECTRICAL}

**“Elimination is the first priority!
Ensure a risk assessment is completed before
energized work tasks are completed.”**

IEEE Electrical Safety Workshop 2023

By Terry Becker, P.Eng., CESC, IEEE Senior Member

I have attended the IEEE Industrial Application Society (IAS), Electrical Safety Workshop (ESW) for 17 years. This year it was held in Reno, Nevada from March 13-17, 2023. When I started my electrical safety journey in 2005 I became aware of the IEEE ESW and attended my first conference in Denver, CO. It became a catalyst for my passion in electrical safety. It is the only conference that I am aware of that is devoted to electrical safety, and with the format that it utilizes.

The conferences starts on Monday with electrical safety related Standards development Technical Committee meet-

ings, Tuesday morning is always Tutorials, and the Technical Papers start at noon on Tuesday. There is only a single track, so you never miss a presentation.

Wednesday includes papers in the morning and then an electrical safety focussed exhibition in the afternoon, one stop shopping for the latest in electrical equipment technology, arc flash & shock PPE, tools & equipment, consulting services, and associations related to electrical safety (e.g. ESFi, NETA, etc.).

Thursday is a full day of technical presentations, yes a busy

day, but amazing opportunity to learn, benchmark, network and ask questions.

Friday AM technical papers continue and the conference officially ends at noon. Friday PM offers another opportunity for tutorials.

All of this is scheduled with an amazing amount of time to network, catch up with attendees, meet new friends and get caught up with old friends. Networking alone at the IEEE ESW is unbelievable!

As far as Canadian attendance I would say we average 50 at least every year or more and we need this to grow! Many Canadian presenters are showcased every year.

Here are some highlights from the 2023 Conference:

On Monday, IEEE F1584.2 just kicked off; this supplement to IEEE 1584 will focus on data collection for arc flash incident energy analysis studies. Additional IEEE F1814 Recommended Practice for Electrical System Design Techniques to Improve Electrical Safety Technical Committee meeting occurred. This is a new recommended practice to be developed.

I attended an amazing tutorial related to capacitors and electrical safety on Tuesday morning. A new capacitors Annex was added to NFPA 70E in 2021 based on research completed by the USA DOE. New information with respect to the hazards related to capacitors and especially high voltage.

Technical papers covered a broad scope of subject content as they do every year:

1. DC arc flash incident energy related to battery storage systems.
2. Limitations of a compliance-based safety culture and opportunities to reduce electrical injuries.
3. Hydro Quebec reported on some arc flash tests they competed for 150VDC and 240VAC related to metering.
4. Why a low voltage pen style proximity tester cannot be used to verify absence of voltage to low voltage systems.
5. The benefit of electrical equipment asset maintenance and reliability to electrical safety.
6. Arc-rating or flame-resistant fabric, variability and repeatability.
7. Why do electrical fatalities occur on the job? Understanding the human factor of a fatality.
8. BC Hydro presented on their internal review of 347/600V arc flash mitigation and an internally developed smart phone application for their Technicians to use to identify incident energy and the arc flash boundary.
9. NFPB 70B Standard for Electrical Maintenance was just published in the USA. This was previously a recommend

practice. Significant changes were also made including the concept of “Maintenance for Safety” that we had already embedded in CSA Z463 Maintenance of Electrical Systems Standard. By the way, in my last article I indicated we will be publishing the next edition of CSA Z463 most likely in 2024.

10. Modeling DC arc physics and applications for DC arc flash risk assessment.
11. A deeper dive into leading and lagging indicators for electrical safety.
12. Reducing risk when performing energized work on batteries.
13. Do not buy arc flash PPE from amazon.com. Simple!
14. Arc resistant electrical equipment, a risk control perspective.
15. Demystification or arc fault circuit interrupters.
16. Normalization of deviance, why accidents are not always accidental.
17. Is absence of voltage “Live-Dead-Live” testing according to NFPA 70E adequate?
18. Advancing electrical safety towards a global electrical work safety standard.
19. Sensitivities and issues with arc ratings and ASTM F1959 clothing tests.
20. Arc quenching technology in switchgear, surpassing IEEE C37.20.7.

The Conference exhibition was back to full swing with over 30 exhibitors. Things will pick up again in 2024.

I attended a tutorial on Battery and EV Electrical Safety on Friday afternoon. With the increased proliferation of EVs, batteries and battery technologies related DC voltages will pose a challenge with respect to electrical safety, electric shock and abnormal arcing fault sustainability.

I wish I could truly communicate to you the benefits of attending this conference. I attend it for many reasons, several that I listed above, but also to maintain my electrical safety subject matter expertise, recharge my passion for electrical safety and benchmarking what I know and share with industry in Canada. I would encourage you to attend.

If you have any questions do not hesitate to contact me to discuss.

See you in Tucson in 2024!

I will continue my efforts to communicate information in Electrical Safety Measures and share the knowledge and experience I have in an effort to “Get it Right!!” My electrical safety journey and mission will continue!!



Terry Becker, PEng, CESC, IEEE Senior Member is the first past Vice-Chair of the CSA Z462 Workplace electrical safety Standard Technical Committee and currently a Voting Member and Working Group Leader for Clause 4.1 and the Annexes. Terry is also a Voting Member on the CSA Z463 Maintenance of electrical systems Standard and a Voting Member of the IEEE 1584 Guide for Performing Arc-Flash Hazard Calculations. Terry has presented at Conferences and Workshops on electrical safety in Canada, the USA, India and Australia. Terry is a Professional Engineer in the Provinces of BC, AB, SK, MB and ON. Terry is an Electrical Safety Specialist, Management Consultant, and can be reached at 587.433.3777 or by email terry.becker@twbesc.ca.