

# T&I Meeting Minutes

October 11, 2023 – San Diego, California

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**Chair:** Alex Cochran  
**Secretary :** Caryn Riley  
**Meeting:** Catamaran Resort  
**Time:** October 11, 2023 3:45 pm – 5:30 pm (Pacific Daylight Saving Time)

## Meeting Minutes

### 1. Call to order

The meeting was opened at 3:45 pm and called to order at 3:46 pm PDT.

### 2. In-person meeting etiquette

Chair reviewed etiquette needs for the current meeting site.

### 3. Introductions of Guests

All attendees announced themselves and their affiliation. Sign-up sheet was circulated and attendees were asked to declare their primary subcommittee.

### 4. Attendance

13 Members, 21 Guests

### 5. Approval of the agenda

IEEE TI Fall 2023 Agenda.pdf

Motion to approve the agenda from J. Mizener, seconded by A. Livshitz. The agenda was approved by consensus.

### 6. Patent Slides

IEEE patent slides were shared with the attendees with no comments from the group.

### 7. Meeting minutes approval

S23TImiRev0.pdf

No revisions.

### 8. Chairman's report

- a. [TI Scope review](#)
- b. [Attendance review](#)

### 9. Task forces:

- a. [Aging Switchgear: condition assessment and lifecycle management \(A. Nanning\)](#)

- Asset management content has been now included.
  - Began review and worked on resolving the first round of editorial comments
  - Document is 140 pages without the survey results which will add another 10 pages.
  - Need a way to condense the paper and perform review – don't want to encroach on the standards groups and their work
    - N. Uzelac – suggested adding specific recommendations for changes to the different standards
    - N. Uzelac will do a high level re-organization and then T&I will distribute to the T&I members, the individual subcommittee chairs, and the ADSCOM chair
- b. Power Frequency Over-Voltages  $\geq$  200% of Rated Voltage Across an Open Gap (M. Chhabra)
- IEEE SA White Paper completed
  - Reviewers requested from the attendees by October 30 – K. Smith, A. Livshitz, & J. Mizener will perform technical review.
  - Paper will be posted to iMeet Central site for T&I subcommittee members.
- c. T&D switchgear special applications (M. Christian)
- Became chair in April 2023
  - Topics:
    1. Arc furnace switching,
    2. Gen synch application with HV circuit breakers in the absence of generator circuit breaker
    3. Circuit breakers used in HVDC station on the AC side for filter banks
    4. Power factor testing of CB in the field (this test is not done part of routine production)
    5. Influence of renewables on HV circuit breakers in terms of harmonics, SC rating, X/R ratios, overvoltage
    6. Electronics which is integrated into switchgear such as electronics used for fiber optic current sensors, electronics used with motor operating drives
    7. Impact of HV disconnect switch transients on HV circuit breaker
  - White papers to be generated to address these special applications
  - Looking for members
  - C. Schuetz to present at HVCB subcommittee, S. Guidry volunteered to help on Power Factor testing of CB in the field

## 10. Open Topic

- a. High-voltage circuit breaker topic
- C. Schuetz to be provided the information from ADSCOM advised to ask HVCB if they wish to do the paper or if they wish T&I to work on the topic.
- b. C. Worthington- Supply Chain and Asset Traceability for Electric (SCATE) program
- Program was presented in the Education Session earlier today.
  - A. Farag, chair of SCATE, talked about the project
    - Developing a standard for unique ID for electrical equipment
    - Work groups for each asset – Switchgear group just formed
    - PAR submitted for the general standard and each subcommittee would be responsible for the unique ID model for each specific asset group

- Way to assist with a full life cycle asset management
  - EPRI is very involved and their SIM model content is being used
  - Envisioned as physical marking to be scanned, starting with distribution assets
  - Request for reviewers for the
    - Data model for reclosers – K. Darko to bring to RODE
    - Data model for switchgear – Need familiarity with distribution switchgear so C37.74
- c. Microgrids: request for proposals of switchgear needs for microgrids – what are the gaps, what technology intelligence is needed; Impact of Microgrid Applications on Switchgear Standards
- J. Mizener volunteered to submit a proposal.
  - Proposal intake form to be sent to all members.
- d. Other new topics
- Embedded AI in equipment or data management systems
  - Resilience
  - Constraints on LV/smart device application on older/established devices.
  - Request at ADSCOM to have subcommittees to add T&I on their agendas to submit proposal ideas

#### **11. Updates from CIGRE A3, N. Uzelac:**

CIGRE A3 is a technical committee on T&D equipment. Several new working groups being started – two on sensors – field calibration and low power instrument transformers. Finishing working groups are MVCB for DC. Eighty papers submitted for consideration for next summer CIGRE meeting in Paris, France. Meeting will be between the Olympic games and Paralympic games.

#### **12. Future meetings**

Spring 2024, March 31 – April 4, 2024, Westin Beach, Fort Lauderdale, FL

#### **13. Adjourn**

Meeting adjourned at 5:19 PM PDT.

Roster:

<b>Role</b>	<b>First Name</b>	<b>Last Name</b>	<b>Company Affiliation</b>	<b>Attendance</b>
Chair	Alex	Cochran	G&W Electric	X
Secretary	Caryn	Riley	Georgia Tech/NEETRAC	X
Member	Mohit	Chhabra	S&C Electric Co.	X
Member	Michael	Christian	ABB	X
Member	Jeramie	Cooper	Eaton	X
Member	Kennedy	Darko	G&W Electric Co	X
Member	Anil	Dhawan	Allegis Group	X
Member	Albert	Livshitz	Qualus	X
Member	Jeff	Mizener	Siemens Industry, Inc.	X
Member	Andreas	Nenning	OMICRON electronics GmbH	X
Member	Francois	Trichon	Schneider Electric	X
Member	Nenad	Uzelac	G&W Electric	X
Member	Charles	Worthington	Hubbell Power Systems	X
Member	Ted	Burse	Powell Industries, Inc	
Member	Eldridge	Byron	Schneider Electric	
Member	Philippe	Corriveau	MindCore Technologies	
Member	David	Johnson	HVCB	
Member	John	Kaminski	Siemens	
Member	Paul	Leufkens	Power Projects Leufkens	
Member	Carl	Schneider	Schneider Electric	
Member	James	Wenzel	Eaton	
Guest	Edwin	Almeida	Southern California Edison	X
Guest	Joe	Andreyo	Southern States LLC	X
Guest	Kelsey	Bush	ABB	X
Guest	Brian	Gerzeny	Powell Industries, Inc	X
Guest	Douglas	Hill	S&C Electric Co.	X
Guest	John	Kapitula	ABB	X
Guest	Brendan	Kirkpatrick	Southern California Edison	X
Guest	Colby	Lovins	Federal Pacific	X
Guest	Stephanie	Montoya	MKI	X
Guest	Carl	Schuetz	American Transmission Company (ATC)	X
Guest	Christopher	Slattery	FirstEnergy	X
Guest	Kirk	Smith	Retired	X
Guest	Dustin	Sullivan	Hubbell Power Systems	X
Guest	Li	Yu	Eaton	X
Guest	Danish	Zia	UL LLC	X
Guest	Zoltan	Roman	General Electric	X
Guest	Amy	Rowell	Schneider Electric	X
Guest	Paul	Shiller	First Power Group LLC	X
Guest	Abe	Shocket	ABB	X
Guest	Connie	Yin	G&W Canada	X

T&I meeting

starting

@3:45PM



# IEEE T&I Subcommittee Meeting



Image credit: ipopba | Getty Images

Alex Cochran(Chair)  
Caryn Riley(Secretary)



# Agenda

- |     |  |          |
|-----|--|----------|
| 1.  | Call to Order  | Alex C.  |
| 2.  | In-person meeting etiquette  | Alex C.  |
| 3.  | Introduction of Guests   | Caryn R. |
| 4.  | Attendance   | Caryn R. |
| 5.  | Approval of updated Agenda   | Alex C.  |
| 6.  | Patent slides  | Alex C.  |
| 7.  | Approval of Minutes from Spring Meeting  | Caryn R. |
| 8.  | Chairman's report:   | Alex C.  |
|     | a. TI Scope review   |          |
|     | b. New Membership review   |          |
| 9.  | Task forces:   |          |
|     | a. Call for reviewers for 2 task force documents nearing completion.                 | Alex C.  |
|     | b. "Testing for Power Frequency Over-Voltages $\geq 200\%$ open gap"                 | Mohit    |
|     | c. "Aging Switchgear: condition assessment and lifecycle management"                 | Andreas  |
|     | d. "T&D switchgear special applications"   | Mike C.  |
| 10. | Open discussion  |          |
|     | a. Discuss open inquiries.   | All      |
|     | i. HVCB  |          |
|     | ii. Barcoding  |          |
|     | iii. Microgrids  |          |
|     | b. Any new topics that T&I should discuss  | All      |
| 11. | Updates from relevant organizations:   |          |
|     | a. CIGRE A3 update   | Nenad    |
| 12. | Future meetings  |          |
|     | a. Spring 2024: March 31 - April 4, Westin Beach, Fort Lauderdale, FL                |          |
|     | b. Fall 2024: October 13 - 17, OMNI Hotel, Oklahoma City, OK                         |          |
|     | c. Spring 2025: April 5 - 11, Wyndham Grand Orlando Resort Bonnet Creek, Orlando, FL |          |
|     | d. Fall 2025: October 5 - 9, Peppermill Resort, Reno, NV                             |          |
|     | e. Spring 2026: April 26 - 30, Sheraton Sand Key Resort, Clearwater Beach, FL        |          |



# Participants have a duty to inform the IEEE

- Participants shall inform the IEEE (or cause the IEEE to be informed) of the identity of each holder of any potential Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
- Participants should inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims

**Early identification of holders of potential  
Essential Patent Claims is encouraged**

## Ways to inform IEEE

- Cause an LOA to be submitted to the IEEE-SA ([patcom@ieee.org](mailto:patcom@ieee.org)); or
- Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or
- **Speak up now and respond to this Call for Potentially Essential Patents**

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair

# Other guidelines for IEEE WG meetings

- All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
  - Don't discuss the interpretation, validity, or essentiality of patents/patent claims.
  - Don't discuss specific license rates, terms, or conditions.
    - Relative costs of different technical approaches that include relative costs of patent licensing terms may be discussed in standards development meetings.
      - Technical considerations remain the primary focus
  - Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.
  - Don't discuss the status or substance of ongoing or threatened litigation.
  - Don't be silent if inappropriate topics are discussed ... do formally object.

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For more details, see *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and *Antitrust and Competition Policy: What You Need to Know* at <http://standards.ieee.org/develop/policies/antitrust.pdf>

# Patent-related information

The patent policy and the procedures used to execute that policy are documented in the:

- *IEEE-SA Standards Board Bylaws*  
(<http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6>)
- *IEEE-SA Standards Board Operations Manual*  
(<http://standards.ieee.org/develop/policies/opman/sect6.html#6.3>)

Material about the patent policy is available at  
<http://standards.ieee.org/about/sasb/patcom/materials.html>

**If you have questions, contact the IEEE-SA  
Standards Board Patent Committee  
Administrator at [patcom@ieee.org](mailto:patcom@ieee.org)**

# Approval of Minutes

## Meeting Minutes

### 1. Call to order

The meeting was opened at 08:00 am and called to order at 08:03 am EDT.

### 2. Introductions of Guests

Sign-up sheet was completed.

### 3. Attendance

9 Members, 22 Guests

### 4. Approval of the agenda

IEEE TI Fall 2022 Agenda.pdf

The agenda was approved by consensus.

### 5. Patent Slides

IEEE patent slides were shared with the attendees with no comments from the group.

### 6. Meeting minutes approval

S22TImiRev0.pdf

Minutes were amended. Motion to accept, accepted by consensus. Amended minutes w submitted for posting.

### 7. Chairman's report

#### a. TI Scope review

#### b. Introduction of officer rotation, Alex Cochran now chair, Caryn Riley has accepted s role.

### 8. Task forces:

#### a. Aging Switchgear: condition assessment and lifecycle management (Andreas Nenni)

- Three portions of the document – Aging section 60% complete, Condition Assess section – on schedule, Lifecycle Management of aging assets – under developme

- Yesterday task force met on site and conducted a brain storming session about the survey questions, plan to do the survey in the first quarter 2023.
- Goal to have the document for review by the subcommittee for Fall 2023 meeting
- Task Force has 20 members, but always seeking more experts.
- Utility members are requested to provide contacts to send the survey. Survey will take approximately 30 – 40 minutes to complete. CEATI contact on the task force to provide way to deliver the survey. Goal is to have an online link to send the survey out. Utility user group at PES Switchgear, Mike Skidmore, chair, will be contacted to distribute the survey link.
- Discussion followed.
  - Are members seeing increased asset management activities? Yes, being asked to do asset management of older GIS equipment;
  - Is lifecycle management based on installation environment, time in service, manufacturer expected life, maintenance practices? This is the most difficult task of our industry especially with the recent supply chain issues corrupting the ability to replace aging equipment.
  - There is a potential request to "standardize" nameplate information for the utility industry. May be submitted as a proposal for T&I once origin of this standardization plan is known.

#### b. Testing for Power Frequency Over-Voltage >= 200% open gap (Mohit Chhabra)

- Presentation slides will be included in the minutes. Reviewed the scope that is the focus of the white paper. Five contributors are actively assisting with topics of the white paper. TF Chair welcomes additional contributors. Refer to slide for areas where support is needed.
- Discussion of 4.2.5 in the outline: Suggestion that this area may require involvement of the manufacturers; Agree that construction is critical for determining of the ability to survive extended time at 200%; need to have a single test for all devices to prove efficacy
- Sent a utility user group questions, but did not get a response. TF member will follow up with the utility user group chair.
- Goal is to complete document before the Spring 2023 Switchgear meeting.
- Discussion about what to consider – specifically focused on issues of partial discharge across the open gap and the corresponding switchgear components; also why would another test be required besides the existing 1 min dry/10 s wet withstand tests; Shared experience with an issue has been seen on a 38 kV system with degradation of insulation not with the vacuum bottles, at this system voltage level 200% is above the voltage class of the device; should an accelerated life test be added to show performance for the 200% condition?

#### c. T&D switchgear special applications (Alex Cochran)

- Seeking a volunteer to lead this task force as current leader has not been able to move the work forward (new position within his organization).
- Slides presented from Fall 2021 web meeting of topics and general outline of what would be covered for each topic

- Mike Christian volunteered to lead the Task Force. Would like all historical information on the progress.

### 9. Open discussion

#### a. Discuss "call for experts" to participate in renewables Task Forces (Nenad Uzelac, past SC chair)

- Still a challenge in getting experts from outside the Switchgear committee
- Identified several ways to get new experts for contacts – most successful was Condition Assessment TF chair using LinkedIn
- IEEE Future Directions newsletter was brought up and information supplied to investigate possible use

#### b. IEEE IGET liaison – Nenad Uzelac

- Presentation will be included with the minutes.
- Alex Cochran will contact James Follum about access to the October 28 meeting from 1-2 pm and if meeting sign in information can be shared with this subcommittee; She will distribute the link to all attendees if approved.

#### c. Any new topics that T&I should discuss?

- Nenad Uzelac/Dan Schiffbauer – topic was brought to HVCB, but HVCB subcommittee voted it down as it was too focused on a specific technology for the subcommittee and they believe it fit within T&I scope, Request from HVCB for T&I to create a task force to generate a technical report/white paper on high voltage ac vacuum interrupters or update the content of IEEE PES TR64 (2018) suggestion to broaden scope to similar scope as Cigre S89 (2014); request that the original requester to complete a T&I project proposal form to initiate the project;
- Chair wants to bring to ADSCOM how do we proceed with update of previous PES TR64 report that was done under ADSCOM and current request to HVCB; will bring proposal to them once completed between meetings so time isn't lost

### 10. Updates from relevant organizations:

CIGRE Paris & CIGRE A3 update (Nenad Uzelac) – slides included in the minutes. Trend of joint working groups between committees; had a meeting between IEEE PES and CIGRE to discuss working out copyright issues between organizations and collaboration for future conferences and working groups; Next meeting in Paris in 2 years, it's scheduled between the Olympics and ParaOlympics; CIGRE US National Committee presenting Grid of the Future Conference in Chicago, November 7-10, 2022.

### 11. Future meetings

- a. Spring 2023 (April 16 – 20), Sheraton Sand Key, Clearwater Beach, FL
- b. Fall 2023 (October 08 – 13), Catamaran Resort, San Diego, CA

### 12. Adjourn

Motion to adjourn meeting Anil Dhawan, second Carl Schneider. Meeting adjourned at 09:44 EDT.

# IEEE Switchgear T&I sub-committee

- **Facilitates** and **conducts** research related to Switchgear, Circuit breakers and Fuses that are covered under IEEE switchgear standards. The need for innovations arises because of the changing business environment and technology offerings.
- **Develops** technical reports and makes recommendations for further advancement of IEEE switchgear standards.
- **Coordinates** with other technical committees, groups, societies, and associations as required.

# IEEE Switchgear T&I sub-committee

- Will not develop standards
- Will cover the projects that are of interest to more than one switchgear subcommittee
- Anyone can write and submit a project proposal
- Subcommittee members will decide which projects to take.
- Initial members are chosen based on nominations, after will follow IEEE attendance rules.

# T&I Membership

- LVSD
  - Ted Burse
  - Carl Schneider
  - Jeff Mizener
- SA
  - Alex Cochran
  - Eldridge Byron
  - Albert Livshitz
- HVCB
  - Dave Johnson
  - Paul Leufkens
  - Vacant
- HVF
  - Charles Worthington
  - James Wenzel
  - Jeramie Cooper
- RODE
  - Kennedy Darko
  - Anil Dhawan
  - Caryn Riley
- HVS
  - John Kaminski
  - Phillip Corriveau
  - Vacant
- At-Large Members
  - Mohit Chhabra
  - Michael Christian
  - Andreas Nenning
  - Francois Trichon
  - Nenad Uzelac



# Task Force reports

# Task Forces

- 1) Reviewers Needed
- 2) “Testing for power frequency over-voltages >200% open gap” (**paper**) **Lead: Mohit**
- 3) “Aging Switchgear: condition assessment and lifecycle management” **Lead Andreas** (**tech. report**)
- 4) “T&D switchgear special applications” **Lead: Mike C** (**technical report**)

# TF Slides

# Open Discussion

## 1) *Open Topics:*

- HVCB
- Barcoding
- Microgrids

## 2) *Any new topics that T&I should discuss*

# Updates from CIGRE A3

# Next Meeting

- ❑ Spring 2024: March 31 - April 4, [Westin Beach](#), Fort Lauderdale, FL
- ❑ Fall 2024: October 13 - 17, [OMNI Hotel](#), Oklahoma City, OK
- ❑ Spring 2025: April 5 – 11, [Wyndham Grand Orlando Resort Bonnet Creek](#), Orlando, FL
- ❑ Fall 2025: October 5 – 9, [Peppermill Resort](#), Reno, NV
- ❑ Spring 2026: April 26 – 30, [Sheraton Sand Key Resort](#), Clearwater Beach, FL

*That's all Folks!*