

Annex K Power Transformers Subcommittee

October 22, 2025

Bonita Springs, Florida, USA

Meeting Time: 1:30-2:45 p.m.

Chair: Ryan Musgrove

Vice Chair: Alwyn VanderWalt

Secretary: Weijun Li

K.1 Meeting Attendance

The Power Transformers Subcommittee (PTSC) met on Wednesday, October 22 at 1:30 p.m. The attendance record indicates that 92 out of 120 members of the subcommittee were in attendance; a quorum at the meeting was achieved. A total of 260 individuals attended the meeting. PTSC Chair Ryan Musgrove (Oklahoma Gas & Electric), Vice Chair Alwyn VanderWalt (Electrical Consultants, Inc.), and Secretary Weijun Li (Braintree Electric Light Department) were all in attendance.

Ten individuals requested membership by speaking with or emailing PTSC officers after the meeting. Five attended at least 3 out of the last 5 meetings and therefore qualified for “Member” status. The other 5 have not been recorded in attendance in 3 out of the last 5 meetings, and therefore not yet qualified for membership.

A total of 59 individuals were added as “Guests” to the subcommittee. Thirty-three individuals updated their contact information. Two individuals have been moved from “Member” to “Guest” for not having recorded attendance at the last 3 out of 5 meetings.

With the membership changes stated above, PTSC has a total of 123 members after the Fall 2025 meeting.

The complete attendance record is provided in Attachment K.1.

K.2 Approval of Agenda and Meeting Minutes

The Chair presented the meeting agenda. Ewald Schweiger (Siemens Energy) made a motion to approve the agenda as presented, which was seconded by Sanjib Som (Pennsylvania Transformer). The agenda was approved without objection. The approved agenda can be found in Attachment K.2. Hugo Flores (ERMCO) made a motion to approve the Spring 2025 meeting minutes, which was seconded by Stephen Shull (BBC Electrical Services, Inc.). The Spring 2025 meeting minutes were approved without objection.

K.3 Chair’s Remarks

The Chair provided an update on the PTSC roster. Due to the success and ease of Microsoft Forms sign-in QR code, this has replaced paper rosters and will be used for meeting attendance going forward. All members should scan the QR code to sign in. Two members had been moved to Guest status due to not having attended at least 3 out of the last 5 meetings. If someone believes their membership status has been incorrectly changed, or is not shown properly, they should speak with the Chair after the meeting or email him. Attendees were reminded to keep their email address up

to date. Using IEEE alias as contact email is highly recommended. The Chair also announced that guests who wish to become a member of the Power Transformers Subcommittee should see subcommittee officers after the meeting or contact one of the officers by email requesting membership.

The Chair provided an overview of the future scheduled meetings and proposed locations.

The Chair provided an overview of the working group and task force requirements for scheduling meetings, submission of minutes, and other administrative tasks. The Chair stated that meeting invitations should be initiated at least 2 weeks in advance. The Chair suggested that short meetings be held virtually so they won't take up in-person meeting slots.

The Chair provided an update on the new system tracking attendance and reminded the membership to create their account in the new committee management system Memberplanet if they haven't already done so.

The Chair reminded the working groups of patent calls and copyright & participant behavior review at each meeting and note in the minutes.

The Chair emphasized that the name and affiliation of any individual who makes or seconds a motion and the voting results must be recorded in the meeting minutes.

The Chair asked the audience to use a microphone and state their name and affiliation when speaking.

The Chair shared a note from AdCom suggesting that a WG form a comment resolution group to handle comments from the ballot when moving a draft to ballot.

The Chair announced that Patrycja Jarosz is the IEEE staff point of contact for PTSC.

The Chair showed a summary slide and provided an overview of the documents that PTSC is responsible for developing and maintaining.

The Chair introduced 6 new members that were added to the PTSC membership list since the Spring 2025 meeting. The new members are listed below:

Nikolaus Dillon (Dominion Energy)
Raymond Frazier (Ameren)
Jinesh Malde (M&I Materials Inc.)
Hampton Allen Steele (Tennessee Valley Authority)
Jonathan Tan (Northern Transformer)
Joe White (Power Engineers)

The Chair provided the requirements for establishing & maintaining membership and urged members to participate in all email ballot requests. When a voting member is absent for more than two consecutive scheduled regular meetings and fails to participate by correspondence, the member may be removed.

All attendees were reminded that pictures are not to be taken during any working group or task force meeting of the work being done unless specifically announced that it is allowed by the chair.

K.4 Working Group and Task Force Reports

K.4.1 Revision of C57.131, Standard Requirements for Tap Changers – Craig Colopy

This group didn't meet in Bonita Springs. The final draft (D1.3) was approved as a revised standard by IEEE SA Standards Board Standards Review Committee (RevCom) on February 15, 2024. The revised document has been published with a new expiration date of December 31, 2034.

K.4.2 WG C57.156, Guide for Tank Rupture Mitigation of Liquid-Immersed Power Transformers and Reactors – Peter Zhao

This working group met on Monday without a quorum. WG Chair Peter Zhao (BC Hydro) provided a update on the document review since the Denver meeting.

The group discussed the proposed changes to Subsections 5.3.1, 5.3.3, and 5.3.4. The group also discussed the new Section 5 table of contents and Annex C, which now contains contents that have been moved from the old Section 5.

A draft of Section 5 will be circulated within the group before the next in-person meeting.

Entity PAR P0148, Guide for Arc Test of Liquid Immersed High-Voltage Direct-Current (HVDC) Converter Transformers, was introduced by Ryan Musgrove (Oklahoma Gas & Electric) for the group's consideration and reference.

The complete meeting minutes can be found in Attachment K.4.2. The next in-person meeting is planned for Spring 2026 in Fort Worth, Texas.

K.4.3 Revision of C57.116, Guide for Transformers Directly Connected to Generators – Weijun Li

This working group completed its work in 2022; therefore, they won't meet again until the next revision cycle, possibly 2027.

K.4.4 WG IEEE 638, Standard for Qualification of Class 1E Transformers for Nuclear Power Generating Stations – Craig Swinderman

This working group met on Monday with 11 members and 23 guests present. 10 guests requested membership. WG Chair Craig Swinderman (Mitsubishi Electric Power Products) said that the PAR was approved on December 6, 2023 with an expiration date of December 31, 2027. The group reviewed Draft 4 of the document.

The working group voted unanimously to seek approval from PTSC to move the document to IEEE SA for balloting. A comment resolution group has also been formed to resolve comments from the SA ballot.

Craig Swinderman (Mitsubishi Electric Power Products) made a motion to move Draft 4 of IEEE 638, Standard for Qualification of Class 1E Transformers for Nuclear Power Generating Stations to ballot. Dan Sauer (Eaton Corporation) seconded the motion. The motion passed with unanimous approval.

The complete meeting minutes can be found in Attachment K.4.4. The next in-person meeting is planned for Spring 2026 in Fort Worth, Texas.

K.4.5 WG C57.135, Guide for the Application, Specification, and Testing of Phase-Shifting Transformers – Ewald Schweiger

This working group met on Monday with 33 attendees. A quorum was not achieved. WG Chair Ewald Schweiger (Siemens Energy) provided an update on document review since the Dever meeting.

Much of the meeting focused on discussing co-sponsorship and draft sharing between this group and PSRC (Power System Relaying and Control Committee). The documents of interest are C57.135 and C37.245, IEEE Guide for the Application of Protective Relaying for Phase-Shifting Transformers. The key consideration was to keep these documents linked for future revisions. Motions were made and seconded to approve co-sponsorship and draft sharing with C37.235. No voting took place at the meeting due to lack of quorum. WG members should be on the lookout for e-voting.

The complete meeting minutes can be found in Attachment K.4.5. The next in-person meeting is planned for Spring 2026 in Fort Worth, Texas.

K.4.6 WG Liquid-Immersed Phase-Shifting Transformers 60076-57-1202 – Ewald Schweiger

This working group met on Tuesday with 32 attendees and achieved a quorum. WG Chair Ewald Schweiger (Siemens Energy) led the discussion of co-sponsorship and draft sharing between this group and PSRC's C37.245, IEEE Guide for the Application of Protective Relaying for Phase-Shifting Transformers. The key consideration was to keep these documents linked for future revisions

The WG voted unanimously to approve draft sharing with C37.245. The group also decided not to become a co-sponsor of C37.245.

Kevin Juchem (Hitachi Energy) provided an update on the suggested changes to the document. He will implement the changes and create the first draft of the document.

This working group continues to seek volunteers to review the existing document for improvements.

The complete meeting minutes can be found in Attachment K.4.6. The next in-person meeting is planned for Spring 2026 in Fort Worth, Texas.

K.4.7 Revision of C57.143, Guide for Application of Monitoring Equipment to Liquid-Immersed Transformers and Components – Mike Spurlock

This group didn't meet in Bonita Springs. The draft guide was approved by the IEEE SA Standards Board in December 2024.

K.4.8 WG C57.12.10, Standard Requirements for Liquid-Immersed Power Transformers – Scott Digby

This working group met on Monday without a quorum. This was the 3rd WG meeting. The current document expires December 31, 2027 and the PAR has an expiration date of December 31, 2028.

WG Chair Scott Digby (Duke Energy) reported that Draft D1 had been circulated for comment before the Spring 2025 meeting. The focus of this meeting was to review the remaining 4 comments from the original 32 that had been received plus the additional 7 received between the Spring 2025 and the Fall 2025 WG meetings. 8 of these 11 comments were resolved. Volunteers will be working on resolution proposals for 7 comments (4 from Spring 2025 and 3 from Fall 2025) targeting submittal of input by the end of 2025.

The complete meeting minutes can be found in Attachment K.4.8. The next in-person meeting is planned for Spring 2026 in Fort Worth, Texas.

K.4.9 Revision of C57.125, Guide for Failure Investigation, Documentation, Analysis and Reporting for Power Transformers and Shunt Reactors – Hakan Sahin

This working group met on Monday and achieved a quorum. WG Chair Hakan Sahin (Virginia/Georgia Transformer) reviewed the project timeline with the group noting that a PAR extension has been approved. The updated PAR expiration date is December 2027. The draft document is complete and ready for ballot. The group re-confirmed the commitment from the Comment Resolution Group that was formed at the Spring 2025 meeting. Virtual meeting schedules were also discussed.

The complete meeting minutes can be found in Attachment K.4.9. The next in-person meeting is planned for Spring 2026 in Fort Worth, Texas.

K.4.10 WG C57.157, Guide for Conducting Functional Life Tests on Switch Contacts Used in Insulating Liquid-Immersed Transformers – Adam Sewell

This working group met on Tuesday with a total of 51 attendees. A quorum was achieved. The PAR was approved June 2023 and expires December 2027. WG Chair Adam Sewell (Quality Switch, Inc.) reviewed the project timeline with the group.

The group will create draft 1.0 and will need any input from members on recommended changes/additions/deletions to the current document.

The group had discussions about adding oil quality checks before and after the testing of the contacts are performed.

The group also identified the need for volunteers to try this guide with synthetic esters. Quality Switch and Specialty Transformer Components will work on setting up/performing testing using synthetic esters.

The complete meeting minutes can be found in Attachment K.4.10. The next in-person meeting is planned for Spring 2026 in Fort Worth, Texas.

K.4.11 WG C57.170, Guide for the Condition Assessment of Liquid Immersed Transformers, Reactors and Their Components – Kumar Mani

This group didn't meet in Bonita Springs. The draft guide was approved by the IEEE SA Standards Board and will be published in 2025 according to the standards report.

K.4.12 Revision of C57.150, Guide for the Transportation of Transformers and Reactors Rated 10,000 kVA or Higher

This group didn't meet in Bonita Springs. The revised guide was approved and published in 2023, with next revision due December 2033.

K.4.13 WG PC57.17, Standard Requirements for Arc Furnace Transformers – Jason Varnell

This working group met on Tuesday with a total of 20 attendees. 9 of 23 members were present; therefore, a quorum was not achieved. Based on attendance records, there will be 16 members after the Fall 2025 meeting. This was the 4th meeting as a working group. WG Chair Jason Varnell (Doble Engineering) reported that the group reviewed the 20 comments from the 3rd straw ballot and were able to resolve 13 of them. A virtual meeting will be needed prior to Spring 2026 WG meeting to resolve the 7 remaining comments

If all comments can be resolved prior to Spring 2026 WG meeting, the group will seek virtual approval from PTSC for Draft 2.3 to go for SA ballot.

The complete meeting minutes can be found in Attachment K.4.13. The next in-person meeting is planned for Spring 2026 in Fort Worth, Texas.

K.4.14 WG C57.107, Recommended Practice for Developing Short-Term Overexcitation V/Hz Curves for Transformers Directly Connected to Generators – Joe Watson

This working group didn't meet in Bonita Springs. This document was approved and published in 2024 with next revision due December 2034.

K.4.15 WG C57.140, Guide for Evaluation and Reconditioning of Liquid-Immersed Power Transformers – Marcos Ferreira

This working group met on Tuesday with 79 attendees. A quorum was not achieved. WG Chair Marcos Ferreira (Engineering Consultant Services) provided an update on PAR modification after the Dever meeting.

Six task forces presented their findings on review of other IEEE documents to identify information that overlaps with C57.140.

TF 1 (Comparison): C57.140 vs. C57.152 presented by Dominic Pollaro (NASS)

TF 2 (Comparison): C57.140 vs. C57.170 presented by Evgenii Ermakov (Hitachi Energy)

TF 3 (Comparison): C57.140 vs. C57.125 presented by Juan Ortiz (Reinhausen)

TF 4 (Comparison): C57.140 vs. C57.637 presented by Ed TeNyenhuis (Hitachi Energy)

TF 5 (Comparison): C57.140 vs. C57.143 presented by Derek Hollrah (Burns & McDonnell)

TF 6 (Comparison): C57.140 vs. C57.93 presented by Marcos Ferreira (Engineering Consultant Services)

A new task force (TF 7) was formed and will be led by Jinesh Malde (Shell) to compare C57.166 to C57.140.

The complete meeting minutes can be found in Attachment K.4.15. The next in-person meeting is planned for Spring 2026 in Fort Worth, Texas.

K.4.16 WG C57.93, IEEE Guide for Installation and Maintenance of Liquid-Immersed Power Transformers – Scott Reed

This working group met on Tuesday and achieved a quorum. This was the 3rd official working group meeting.

WG Chair Scott Reed (MVA) presented the project timeline and stated that the document is being revamped.

The 7 task forces provided updates:

- TF1: Shipping Method and Assembly – Ryan Musgrove (Oklahoma Gas & Electric)
- TF2: Vacuum Processing Methods – Kyle Stechschulte (American Electric Power)
- TF3: Final Testing and Energization – Elizabeth Bray (Southern Company Services)
- TF4: Relocation and Field Repair – Alwyn VanderWalt (Electrical Consultants, Inc.)
- TF5: Maintenance – Weijun Li (Braintree Electric Light Department)
- TF6: Storage – Patrick Rock (American Transmission Co.)
- TF7: Editorial and Definitions – Jesse Duffy (Nashville Electric Service)

The task forces will continue work and report back to the WG at the Spring 2026 meeting.

The complete meeting minutes can be found in Attachment K.4.16. The next in-person meeting is planned for Spring 2026 in Fort Worth, Texas.

K.4.17 Liaison to PC57.93a Guide for Installation and Maintenance of Liquid-Immersed Power Transformers – Scott Reed

This is liaison activity related to the topic of low temperature cold starts for transformers with natural ester fluid. The Chinese entity PAR revision was published and will be reviewed for addition into the new revision of C57.93.

There were no meeting minutes for this liaison activity.

K.4.18 WG C57.153, Guide for Paralleling Regulating Transformers – Mark Tostrud

This working group met on Tuesday and achieved a quorum. WG Chair Mark Tostrud (Dynamic Ratings, Inc.) reviewed the PAR and project timeline with the group.

The group discussed the proposed changes in Draft D4 including Example 4.4.1 (Common source bus application) and Annex C. The group also discussed the status of the section on recommended actions during reverse power flow. In addition, the group discussed the IEEE policy on inclusive language. Saramma Hoffman (PPL) volunteered to review the document to ensure consistent terminology, and the decision will be documented for reference. The group agreed to proceed with a straw ballot once the current updates are completed, likely by January 2026.

The complete meeting minutes can be found in Attachment K.4.18. The next in-person meeting is planned for Spring 2026 in Fort Worth, Texas.

K.4.19 Liaison to Entity PAR C57.145, Recommended Practice on Digital Twin Modeling and Analysis based on Spatial-temporal Data of Switch Cabinet and Transformer with 110kV and Below – Brian Sparling

This entity PAR was approved in June 2023. Brian Sparling (Kinectrics) is the liaison.

WG Chair Jiayu Want circulated a draft guide on June 8, 2025. A virtual WG meeting was held on July 15, 2015. An updated draft was submitted for pre-MEC (Mandatory Editorial Coordination) review. The group plans to submit the document for ballot in November, which will require approval from PTSC by e-voting.

Dan Sauer (Eaton Corporation) asked if PTSC members will be eligible to ballot on the document. Stephen Shull (BBC Electrical Services, Inc.) said only eligible entities can participate because it is an entity PAR but interested individuals are encouraged to check with the liaison Brian Sparling (Kinectrics) on the process for details.

There were no meeting minutes for this liaison activity.

K.4.20 Liaison to Entity PAR PC57.20 “Guide for Power Transformers for Low-frequency (10-30Hz) Power Transmission”

Sheldon Kennedy (Sheldon P. Kennedy Engineering, PLLC), the liaison to this entity PAR, said there has been no significant progress since the last Entity WG meeting on March 19, 2025. He was under the impression that there would be another WG meeting before the Fall 2025 Transformers Committee meeting but apparently that was not the case. The only status update was that the group plans to complete their work by February 2028.

There were no meeting minutes for this liaison activity.

K.5 Old Business

PAR Study Group C57.148 – Standard for Control Cabinets for Power Transformers – Revision due 2030

PAR Study Group Chair Weijun Li (Braintree Electric Light Department) reported that the group met virtually on July 24, 2025, for an hour and 15 minutes, with 16 attendees. The group recommended the document be revised with the following Title, Scope, and Purpose:

Title: IEEE Standard for Control Cabinets for Power Transformers

Scope: This standard provides minimum and optional function, layout, component, construction, and documentation requirements for control cabinet designs. This standard applies to Class I and Class II power transformers and does not apply to distribution or padmount design transformers.

Purpose: This document provides users and manufactures with a set of standard requirements that can be specified. The document should reduce the engineering time required by manufacturers to create and by users to review control cabinet designs.

Weijun Li (Braintree Electric Light Department) made a motion to seek PTSC's approval to apply for a PAR to revise C57.148 with the Title, Scope, and Purpose shown above. The motion passed with unanimous approval. The group will proceed with submitting a PAR.

The complete meeting minutes can be found in Attachment K.4.21. The next in-person meeting is planned for Spring 2026 in Fort Worth, Texas.

IEC/IEEE 60214-2 Guide for Tap-Changers – Part 2: Application Guide – Revision due 2029

The revision of this document is due in 2029. IEC/IEEE 60214-2 is an IEC/IEEE Dual Logo standard and is intended to assist in the selection of tap-changers designed in accordance with IEC 60214-1 or IEEE Std C57.131. Note that IEC 60214-1:2014 Tap-changers – Part 1: Performance Requirements and Test Methods will likely be up for revision soon with a possibility of combining with the recently published C57.131 Standard Requirements for Tap Changers. In consideration of IEEE/IEC Dual Logo document, Adam Sewell (Quality Switch, Inc.) will work with PTSC Chair Ryan Musgrove (Oklahoma Gas & Electric) and Patrycja Jarosz (IEEE SA) to coordinate with IEC on how to proceed with this project. An in-person meeting in Spring 2026 in Fort Worth, Texas is possible.

IEEE 693 Recommended Practice for Seismic Design of Substations – Substations Standards Committee

PTSC Chair Ryan Musgrove (Oklahoma Gas & Electric) pointed out that any changes in the next revision of IEEE 693 would likely affect power transformer designs. We need volunteers from the Power Transformers and Bushings subcommittees, especially users and transformer manufacturers, to participate in the review and ballot of IEEE 693 once the document is open for revision. Anyone who is interested in getting involved is encouraged to contact IEEE 693 WG Chair Michael Riley at mjriley@bpa.gov.

PTSC Chair Ryan Musgrove (Oklahoma Gas & Electric) displayed the following information for attendees' consideration:

Website - <https://cmte.ieee.org/pes-substations/scd0/wgd4/>

Need a liaison (or two) that is able to attend both Substations and Transformers Committee meetings to inform the Power Transformers Subcommittee and possibly Bushings Subcommittee.

Mamoon Staya (Hitachi Energy) volunteered to be the PTSC Liaison for IEEE 693.

K.6 New Business

Tap Changer Applications on Renewable “GSU Transformers” for Renewable Power Collector Substations

Alwyn VanderWalt (Electrical Consultants, Inc.) presented a total of 4 slides concerning tap changer applications for renewable power collector substations.

Problem Statement: Deficiency in IEEE standards for GSU transformer specification for renewable power collector substation GSU transformers.

Typical GSU applications where problems arise:

- Collector substation GSU with one or more 34.5 kV feeders connecting to inverter based generating resources such as solar, BESS (Battery Energy Storage System), or wind generators
- High Voltage connects to system at voltages from 69 kV to 500 kV
- MVA ranging from 50-300+ MVA
- OLTC often installed on HV winding (due to cost considerations, high LV currents, etc.)

Annex A of C57.12.10 currently covers this type of GSU application. Typical transformer design, if not appropriately specified, would call for variable flux design and OLTC controller configured to regulate HV voltage. However, an average renewable power developer is not familiar with or does not understand C57.12.10 Annex A and the implications of a variable flux transformer design. Many transformer manufacturers are not familiar with or following Annex A, or do not ask relevant questions (in Annex A) to avoid the problem.

Problems observed include OLTC moving in the wrong direction when a voltage raise/lower command is issued, potential core oversaturation issues at extreme tap positions, and uneven step voltages. These problems require reprogramming of OLTC controller and/or rewiring of OLTC control wiring, which result in costly delays and other issues during commissioning.

Alwyn VanderWalt (Electrical Consultants, Inc.) suggested elevating Annex A to be part of the main document of C57.12.10 or developing a standalone guide to address appropriate transformer specification for end users to mitigate the issue.

Dan Sauer (Eaton Corporation) pointed out that C57.153 is also trying to address the same problems (LTC on the high voltage side, reverse power flow, etc.) and invited Alwyn VanderWalt to work with them. Ryan Hogg (Bureau of Reclamation) said that the same applies to C57.133, which works under Standards Subcommittee. It appears that there could be duplicating efforts trying to address the same problems.

Akesh Joshi (Kimley-Horn) and Weijun Li (Braintree Electric Light Department) also shared their thoughts on interconnecting renewable resources and information in IEEE 1547 pertaining to step-up transformers. Poorvi Patel (Hitachi Energy) suggested forming a study group to look over various documents to identify gaps and decide how to proceed.

PTSC Chair Ryan Musgrove (Oklahoma Gas & Electric) appointed Alwyn VanderWalt (Electrical Consultants, Inc.) to lead a task force to further investigate and report back. The following participants volunteered to join the task force:

Alwyn VanderWalt (TF chair/leader, Electrical Consultants, Inc.)
Ryan Musgrove (Oklahoma Gas & Electric)
Marcos Ferreira (Engineering Consultant Services)
Scott Digby (Duke Energy)
Akash Joshi (Kimley-Horn)
Jason Varnell (Doble Engineering)

Brad Staley (Leeward Renewable)
Wilerson Calil (Hitachi Energy)

Entity PAR Request P0148 – Guide for Arc Test of Liquid Immersed High-Voltage Direct-Current (HVDC) Converter Transformers

This request will be referred to C57.156 (Guide for Tank Rupture Mitigation of Liquid-Immersed Power Transformers and Reactors) that is currently under revision. More information is needed on this entity PAR request, and it is suggested that they participate in the current revision of C57.156. Information submitted by this group will be posted on the PTSC website.

Entity PAR Request P0203R1 – Recommended Practice for Transformer Operating Condition Inspection

This falls under C57.143 (Guide for Application of Monitoring Equipment to Liquid-Immersed Transformers and Components). It is suggested that they review the current revision of this guide with the recommendation they write a paper with more information – for considered of being added to the next revision of the guide.

Entity PAR Request P0137 – Guide for Composite Current Switching Test of Vacuum-Type on Load Tap Changer for Converter Transformer

IEC 60214-2 and IEEE C57.131 are being considered for revision, and under review by a task force. It is recommended that they participate in the revision of these documents. PTSC Chair Ryan Musgrove (Oklahoma Gas & Electric) suggested they take part in the upcoming IEC and IEEE joint revision of the documents.

Note that the presentations from the 3 entity PAR requests have been posted to the PTSC website: <https://www.transformerscommittee.org/subcommittees/powertransf/>

K.7 Adjournment

The meeting adjourned at 2:45 p.m.

K.8 Attachments

Attachment K.1 – Attendance
Attachment K.2 – Agenda
Attachment K.4.1 – C57.131 (No Meeting)
Attachment K.4.2 – C57.156 Minutes
Attachment K.4.3 – C57.116 (No Meeting)
Attachment K.4.4 – IEEE 638 Minutes
Attachment K.4.5 – C57.135 Minutes
Attachment K.4.6 – 60076-57-1202 Minutes
Attachment K.4.7 – C57.143 (No Meeting)
Attachment K.4.8 – C57.12.10 Minutes
Attachment K.4.9 – C57.125 Minutes
Attachment K.4.10 – C57.157 Minutes
Attachment K.4.11 – C57.170 (No Meeting)
Attachment K.4.12 – C57.150 (No Meeting)
Attachment K.4.13 – C57.17 Minutes

Attachment K.4.14 – C57.107 Minutes (No Meeting)

Attachment K.4.15 – C57.140 Minutes

Attachment K.4.16 – C57.93 Minutes

Attachment K.4.17 – Liaison to PC57.93a (No Meeting Minutes)

Attachment K.4.18 – C57.153 Minutes

Attachment K.4.19 – Liaison to Entity PAR for C57.145 (No Meeting Minutes)

Attachment K.4.20 – Liaison to Entity PAR for PC57.20 (No Meeting Minutes)

Attachment K.4.21 – C57.148 Minutes

Attendance Record

Role	First Name	Last Name	Company
Member	Kayland	Adams	Prolec GE Waukesha
Guest	Karina	Albacete	Siemens Energy
Guest	Robert	Allison	Dominion Energy
Guest	Seetaram	Alwala	Kiewit
Guest	KyungChan	An	Hyosung
Member	Tauhid Haque	Ansari	Hitachi Energy
Member	Stephen	Antosz	Stephen Antosz & Associates, Inc
Guest	Elise	Arnold	SGB
Member	Javier	Arteaga	Hitachi Energy
Member	Onome	Avanoma	MJ Consulting
Member	Donald	Ayers	Ayers Transformer Consulting
Member	Gilles	Bargone	FISO Technologies Inc.
Member	Christopher	Baumgartner	We Energies
Guest	Barry	Beaster	H-J Family of Companies
Guest	Jason	Beaudoin	Weidmann Electrical Technology
Guest	Tiago	Bertran	Siemens Energy, Inc.
Member	Enrique	Betancourt	Prolec GE
Guest	Edwin	Betancourt	Siemens Energy
Guest	Kevin	Biggie	Weidmann Electrical Technology
Member	Wallace	Binder	WBBinder Consultant
Guest	Robert	Blake	Niagara power transformer
Guest	Piotr	Blaszczyk	Specialty Transformer Components LLC
Member	William	Boettger	Boettger Transformer Consulting LLC
Guest	Joshua	Bohrn	Power Engineers
Guest	Roberto	Borges	Hitachi Energy
Member	Michael	Botti	Hyosung HICO
Guest	Garrett	Bradshaw	Howard Industries
Guest	Elizabeth	Bray	Southern Company Services
Guest	Fabián camilo	Cala gonzalez	Siemens Energy
Guest	Wilerson	Calil	Hitachi Energy
Member	David	Calitz	Siemens Energy
Guest	Juan Alfredo	Carrizales	Prolec GE
Member	Juan	Castellanos	Prolec GE
Guest	Juan	Castro	Magnetron
Member	Stuart	Chambers	EPRI
Guest	Sudip	Chanda	Delta Star Inc.
Guest	Adriana	Cisco Sullberg	Salt River Project

Member	Craig	Colopy	Retired - General Interest
Guest	Michael	Craven	Qualus Corp.
Guest	Daniel	Crockett	Ameren
Guest	Janet	Crockett	Fayetteville PWC
Member	Juan Carlos	Cruz Valdes	Prolec GE
Guest	Marcos	Czernorucki	Hitachi Energy
Member	Roberto	Da Silva	Maschinenfabrik Reinhausen
Guest	Pouneh	Davoudi	Delta Star Inc.
Guest	Samson	Debass	EPRI
Guest	Dumitru	Diaconu	Delta Star Inc
Guest	Fabricio	Dias	GE Vernova
Member	Scott	Digby	Duke Energy
Member	Nikolaus	Dillon	Dominion Energy
Guest	xingshuang	Du	Sieyuan
Guest	Jesse	Duffy	Nashville Electric Service
Member	Hakim	Dulac	Advanced Power Technologies
Guest	William	Elliott	AEP-SWEPCO
Guest	Eric	Elson	SDGE
Member	Evgenii	Ermakov	Hitachi Energy
Guest	Said	Ersoy	Eaton
Member	Reto	Fausch	RF Solutions
Guest	zlatan	fazlic	Camlin Energy
Guest	Roger	Fenton	Fenton Solutions
Guest	Miguel	Fernandez	Braintree Electric Light Dept.
Member	Marcos	Ferreira	Engineering Consultant Services
Member	Hugo	Flores	ERMCO
Member	Bruce	Forsyth	Cargill
Member	Raymond	Frazier	Ameren
Guest	Jean-Philippe	Gagnon	Qualitrol Company LLC
Guest	Jose	Gamboa	H-J Family of Companies
Member	Eduardo	Garcia Wild	Siemens Energy
Member	James	Gardner	Prolec GE Waukesha
Member	Rob	Ghosh	GE Vernova
Member	Alireza	Gorzin	Black & Veatch
Guest	Shawn	Gossett	Ameren
Guest	Varun	Goyal	Hydro One
Guest	Taylor	Gray	Portland General Electric (PGE)
Member	Bill	Griesacker	William Griesacker and Associates
Guest	Samuel	Gruskiewicz	GE Vernova
Guest	Sachin	Gupta	Pennsylvania Transformer Technology

Member	Niklas	Gustavsson	Hitachi Energy
Member	Attila	Gyore	Shell UK
Guest	Neal	Hamer	American Wire Group (AWG)
Guest	Didier	Hamoir	Transformer Protector Corp
Guest	Eric	Hatton	Tempel
Member	Roger	Hayes	GE Vernova
Guest	Steven	Hegerle	Howard Industries
Guest	Peter	Heinzig	Weidmann Electrical Technology
Guest	David	Herrington	PTT/Warranty Manager
Guest	William	Herron	Reinhausen
Member	Saramma	Hoffman	PPL Electric Utilities
Member	Ryan	Hogg	Bureau of Reclamation
Guest	Thomas	Holifield	Howard Industries
Guest	Traci	Hopkins	H2Scan
Member	Philip	Hopkinson	HVOLT Inc.
Guest	Roy Neil	Hutchins	Reinhausen Manufacturing Inc
Guest	Youssef	Jaber	PECO
Member	Nicholas	Jensen	Delta Star Inc.
Guest	Chanmin	Jeong	HD Hyundai
Member	John	John	Virginia Transformer Corp.
Guest	Christopher	Johnson	Oncor Electric Delivery
Guest	Akash	Joshi	Kimley-Horn
Guest	Kevin	Juchem	Hitachi Energy
Guest	Geraldo	Junior	Siemens Energy
Guest	Laszlo	Kadar	Laszlo & Associates
Member	Kurt	Kaineder	Trench Austria
Guest	Jerzy	Kazmierczak	Hitachi Energy
Guest	Thomas	Keels	kEElectric Engineering PLLC
Member	Sheldon	Kennedy	Sheldon P. Kennedy Engineering, PLLC
Guest	Qasim	Khan	Georgia Tech NEETRAC
Guest	Yeounsoo	Kim	JST Power Equipment
Guest	Dohyung	Kim	HD Hyundai electric
Member	Zan	Kiparizoski	Howard Industries
Guest	Fred	Kirchner	HICO America
Guest	Nihat	Kosedagi	ERMCO
Guest	Anton	Koshel	Delta Star Inc.
Guest	Alexander	Kraetge	OMICRON electronics Deutschland GmbH
Guest	Arvind	Kumar	Delta star inc
Guest	Bernard	Labean Jr.	Consumers Energy
Guest	Ashwini	Labh	Hitachi Energy

Guest	Donald	Lamontagne	Arizona Public Service Co.
Guest	Jameson	Leach	Raytech USA
Guest	Fernando	Leal	Prolec GE
Guest	Stefan	Lembacher	Siemens Energy
Secretary	Weijun	Li	Braintree Electric Light Dept.
Guest	Parry	Lively	Tempel
Guest	Mario	Locarno	Doble Engineering Co.
Guest	Ricardo	Lopes	Efacec Energia, SA
Guest	Tiffany	Lucas, P.E.	Prolec GE
Member	Jose	Machain	Prolec GE
Guest	Swapnil	Marathe	Megger
Guest	Alberto	Martinez	WEG
Guest	Daniel	Martinez	JFE canada
Guest	Robert	Mayer	Trench Austria
Member	Thomas	Melle	HIGHVOLT
Guest	Toni	Mellin	Vaisala
Guest	Omar	Mendez Zamora	Prolec GE
Guest	Filip	Mikulecky	Siemens Energy KPT
Guest	Emil	Milea-Ciobanu	Delta Star
Guest	Alexander	Millan	Siemens Energy
Member	Francis	Mills	Power Engineers, Inc.
Guest	Goran	Milojevic	DV Power
Guest	Juliano	Montanha	Siemens Energy
Guest	Gianetta	Morrow	CamTran
Guest	Diego	Moyolema	Ecuatran SA
Guest	Fredy	Murcia	Siemens Energy
Chair	Ryan	Musgrove	Oklahoma Gas & Electric
Guest	Shankar	Nambi	Bechtel
Guest	Anthony	Natale	HICO America
Member	Kristopher	Neild	Megger
Member	Anastasia	O'Malley	Consolidated Edison Co. of NY
Guest	Cuauhtemoc	Ortiz	Niagara Power Transformer
Guest	Juan	Ortiz	Reinhausen Manufacturing
Guest	Dwight	Parkinson	EATON Corporation
Member	Poorvi	Patel	Hitachi Energy
Guest	Sanjay	Patel	Smit Transformer
Guest	Monil	Patel	Pacific Gas & Electric
Guest	Mathew	Paul	Unimacts Global
Guest	Pedro	Pedro	Efacec Energia
Guest	Luis	Pereira	TBEA power transformers

Guest	John	Phouminh	Novec
Guest	Henry	Pinto	Island Associates Inc
Guest	Goran	Plisic	Siemens Energy KPT
Guest	Bertrand	Poulin	Hitachi Energy
Guest	Thomas	Prevost	Weidmann
Guest	Thomas	Propts	Dominion Energy
Guest	Manuel	Quinones	GE Vernova
Member	Ion	Radu	Hitachi Energy
Guest	Nuno	Rato	Efacec
Member	Timothy	Raymond	Inductive Reasoning
Member	Scott	Reed	MVA
Guest	Arash	Rezvan	Delta Star. Inc
Guest	Juan	Rodriguez	Magnetron
Guest	Jason	Rodriguez	Siemens Energy
Guest	Rodrigo	Ronchi	WEG-Voltran
Member	Yuri	Rossini	Siemens Energy
Member	Marnie	Roussell	Entergy
Member	Mickel	Saad	Hitachi Energy
Member	Hakan	Sahin	Virginia/Georgia Transformer
Guest	David	Sanchez	NextEra Energy
Guest	Jesus	Sanchez rodriguez	Vertiv
Guest	Surinder	Sandhu	TBEA USA Corp
Guest	Amitabh	Sarkar	Virginia Transformer Corp.
Guest	Garret	Sarkinen	Xcel Energy
Member	Daniel	Sauer	EATON Corporation
Member	Markus	Schiessl	SGB
Guest	Stefan	Schindler	Maschinenfabrik Reinhausen
Guest	Eric	Schleismann	Southern Company Services
Guest	Alfons	Schrammel	Siemens Energy
Member	Dan	Schwartz	Quality Switch, Inc.
Member	Ewald	Schweiger	Siemens Energy
Member	Adam	Sewell	Quality Switch, Inc.
Guest	Jeremy	Sewell	Quality Switch, Inc.
Member	Abdul Majid	Shaikh	Delta Star Inc.
Guest	Devki	Sharma	Entergy
Guest	Sanket	Shetty	Oncor Electric Delivery
Guest	Ibrahim	Shteyh	Consultant
Member	Stephen	Shull	BBC Electrical Services, Inc.
Guest	Andre	Simons	JFE Shoji Power
Guest	Jonathan	Sinclair	Black & Veatch

Guest	Amitkumar	Singh	Consolidated Edison Company of New York
Guest	Manpreet	Singh	Constellation Energy
Guest	Nicholas	Skoff	Dominion Energy
Guest	Jason	Snyder	FirstEnergy Corp.
Member	William	Solano	Voltyx
Member	Sanjib	Som	Pennsylvania Transformer
Guest	Seoyun	Song	Hyosung HICO
Guest	Mike	Spurlock	Spurlock Engineering Services, LLC
Member	Fabian	Stacy	Hitachi Energy
Member	Brad	Staley	Leeward Energy
Member	Markus	Stank	Maschinenfabrik Reinhausen
Guest	Mamoon	Staya	Hitachi Energy
Member	Hampton	Steele	Tennessee Valley Authority
Guest	Andrew	Steineman	Delta Star Inc.
Guest	Christopher	Steineman	Hubbell/Meramec Inst.
Guest	Dave	Stelmach	IntelliRent
Guest	Wes	Suddarth	Nashville electric service
Guest	Sunny	Swarna	Virginia Transformer Corp
Guest	Charles	Sweetser	OMICRON electronics Corp USA
Member	Craig	Swinderman	Mitsubishi Electric Power Products
Member	Janusz	Szczechowski	Maschinenfabrik Reinhausen
Member	Jonathan	Tan	Northern Transformer
Member	Troy	Tanaka	Burns & McDonnell
Guest	Marc	Taylor	JFE Shoji Power Canada Inc.
Guest	Richard	Tellez	Siemens Energy
Guest	James	Templeton	Independent
Member	Ed	teNyenhuis	Hitachi Energy
Guest	Andreas	Thiede	Highvolt
Guest	Scott	Thomas	Hitachi Energy
Guest	Leonard	Torchia	PSE&G
Member	Mark	Tostrud	Dynamic Ratings, Inc.
Guest	Ashish	Tyagi	Siemens Energy
Guest	Olivier	Uhlmann	Reinhausen Canada Inc.
Guest	Joel	Valley	Fayetteville PWC
Vice-Chair	Alwyn	Van Der Walt	Electrical Consultants, Inc.
Guest	Cole	Van Dreel	American Transmission Co.
Member	Ajith	Varghese	Prolec Energy
Member	Jason	Varnell	Doble Engineering Co.
Member	Rogério	Verdolin	Verdolin Solutions Inc.

Guest	Hector	Villa	Ecuatran SA
Guest	Luz	Villanueva	Siemens Energy
Member	Richard	vonGemmingen	Dominion Energy
Member	Pragnesh	Vyas	Centre Moloney Inc
Guest	John	Wagner	AEP
Member	David	Wallach	Duke Energy
Guest	Jonathan	Walmsley	GE Vernova
Guest	Joshua	Watson	NPPD
Member	Bruce	Webb	Knoxville Utilities Board
Member	Drew	Welton	Intellirent
Member	William	Whitehead	Reinhausen
Guest	Christopher	Whitten	Reinhausen
Member	Trenton	Williams	Advanced Power Technologies
Guest	Deanna	Woods	PTT
Member	Jeffrey	Wright	Duquesne Light Co.
Guest	Jiahao	Xie	S&C Electric Company
Guest	Muhammad Imran	Yousaf	Hitachi Energy
Guest	Zhenquan	Yu	sieyuan toshiba transformer company
Member	Joshua	Yun	Virginia Transformer Corp.
Guest	Malia	Zaman	IEEE
Guest	Anna	Zhou	JST Power
Member	Kris	Zibert	Allgeier, Martin and Associates
Member	Waldemar	Ziomek	PTI Transformers

Agenda

1. Call to order
2. Chair remarks
3. New Members
4. Determine quorum – Using Microsoft Form QR Code
5. Approval of agenda, approval of previous meeting minutes (sent by e-mail)
6. Working Group and Task Force reports
 - a. WG Revision of C57.131, Tap Changers (published 2024, no meeting).....Craig Colopy
 - b. WG C57.156, Guide for Tank Rupture Mitigation.....Peter Zhao
 - c. WG Revision of C57.116, GSU Transformers (Completed 2022 – no meeting).....Weijun Li
 - d. WG Class 1E Transformer for Nuclear Power gen Std. 638Craig Swinderman
 - e. WG C57.135, Guide for Phase shifting Transformers.....Ewald Schweiger
 - f. WG Revision of C57.143, Monitoring Guide (no meeting).....Mike Spurlock
 - g. WG Std Requirement for Liquid-Immersed Power TR – C57.12.10.....Scott Digby
 - h. WG Revision of C57.125, Failure Investigating and Reporting.....Hakan Sahin
 - i. WG C57.157, Guide for Life test of Switch Contacts.....Adam Sewell
 - j. WG C57.170, Condition Assessment Guide (published 2025, no meeting)Kumar Mani
 - k. WG Revision of C57.150, Transportation Guide (published 2023, No meeting)....-
 - l. WG C57.17, Standard Requirements for Arc Furnace Transformers.....Jason Varnell
 - m. WG C57.107, Transformer Volts per Hertz (published 2024, No meeting).....Joe Watson
 - n. WG Guide for Evaluation & Reconditioning of Liquid Immersed TR C57.140.....Marcos Ferreira
 - o. WG Liquid Immersed Phase-Shifting Transformers 60076-57-1202.....Ewald Schweiger
 - p. WG C57.93, Installation and Maintenance Guide.....Scott Reed
 - q. Liaison to PC57.93a – Installation and Maintenance Guide.....Scott Reed
 - r. WG C57.153, Guide for Paralleling Transformers.....Mark Tostrud
 - s. Liaison to Entity PAR C57.145 – Digital Twin for Power Equipment (DTPE).....Brian Sparling
 - t. Liaison to Entity PAR Guide for PT for Low-Frequency Power Transmission.....Sheldon Kennedy
7. Old business
 - a. C57.148 PAR Study Group – Weijun Li
 - b. 60214-2 Guide for Tap Changers – Part 2: Application Guide revision due 12/31/29
 - a. IEEE C57.131/IEC 60214-1 and IEEE/IEC 60214-2 Updates for the title discussion.
 - c. IEEE 693 Recommended Practice for Seismic Design of Substations – Substations Standards Committee – Need volunteers, especially users and transformer manufacturers. Contact – Michael Riley – mjriley@bpa.gov
 - a. Website - <https://cmte.ieee.org/pes-substations/scd0/wgd4/>
8. New business
9. Adjournment

Title: WG Guide for Tank Rupture Mitigation PC57.156

Time: 9:30 AM- 10:45 AM, Monday, October 20, 2025

Place: Hyatt Regency Coconut Point, Bonita Springs, FL, US

Chair: Peter Zhao **Vice-Chair:** Samuel Brodeur **Secretary:** Hakim Dulac

1. Call to Order at 9:30am

- a. Chair's Remarks
- b. IEEE-SA Policies
 - i. Call for Essential Patents slide presented, and the group made no patent claims.
 - ii. Copyright policies slide presented
- c. Quorum
 - i. *Note: At the time of the quorum call, 15 members were present, and we did not have a quorum. By the end of the meeting, two members joined but we only realized it when we collected the attendance list, so we proceeded with the meeting as we did not have a quorum.

WG active member	Member required for Quorum (> 50%)	Member present	Total attendance (Guest and member)	Quorum established	Non-members that requested Membership
32	17	15	60	No/*Note	4

2. Approval of the Agenda

- i. We did not proceed with the approval of the meeting agenda because we did not have a quorum at this time.

3. Approval of the Spring 2025 Meeting Minutes

- i. We did not proceed with the approval of the meeting minutes because we did not have a quorum at this time.

4. Technical Topics

- i. Reviewed the proposed changes and discussions for Subclause# 5.3.3, 5.3.4, and 5.3.1. Discussions and amendments were made on wordage.
- ii. Discussions were made on the new Chapter 5 table of contents and moving the previous Chapter 5 contents of PRD to Annex C.

5. Unfinished Business

- a. We did not have time to review the new proposed content of chapter 5 in detail for the related components. The new chapter 5 content draft will be sent to the members and guests so they can read it and prepare their comments prior to the next meeting in Fort Worth.

6. New Business

Ryan Musgrove presented the proposal of an Entity PAR Request by China Southern Power Grid on “Guide for Arc Test of Liquid-Immersed High-Voltage Direct-Current (HVDC) Converter Transformers”. Ryan will come back to the group with suggestions in response.

7. Next Meeting

- a. Next Meeting date and location: Fort Worth, TX, March 22-26, 2026.

8. Action Items

- a. Post the “Guide for Arc Test of Liquid-Immersed High-Voltage Direct-Current (HVDC) Converter Transformers” presentation on the IEEE working group website.
- b. Update the comment spreadsheet on the IEEE working group website.
- c. Send the new chapter 5 Related components to the members and guests.

Reported by:
Hakim Dulac, P.Eng.
WG secretary

Attendance:

Name	Affiliation	Member (yes, no, requested)
Andy Speegle	ENTERGY	no
Christop Ploetner	Siemens Energy	no
Christopher Johnson	Oncor	yes
Craig Colopy	Retired from Eaton	no
Craig Swinderman	MEPPI	no
David Calitz	Siemens Energy	yes
David Murray	TVA	yes
Derek Hollrah	Burns&McDonnell	yes
Didier Hamoir	Transformer Protector CORP.	yes
Eduardo Garcia	Siemens Energy	yes
Elizabeth Bray	Southern Company	no
Enrique Betancourt	Prolec-GE	no
Eric Schleismann	Southern Company	no

Filip Mikulecky	Siemens Energy KPT	yes
Francis Mills	Power Engineers	yes
Hakim Dulac	APT	yes
Hector Garza	Orto de Mexico	no
Jason Snyder	FirstEnergy	no
Jerzy Kazmierczak	Hitachi Energy	requested
Joe Nims	Allen& Hoshall	no
Jose Luis Machain Rodriguez	Prolec GE	yes
Joshua Yun	Virginia Transformer	yes
Martin Munoz	Orto de Mexico	no
Michael Botti	Hyosung HICO	yes
Niklas Gustavsson	Hitachi Energy	no
Olivier David Uhlmann	Reinhausen Canada Inc.	no
Patrycja Jarosz	IEEE SA	no
Paul Dolloff	EKPC	no
Peter Zhao	Hydro One	yes
Rehan Ali	Siemens Energy, Inc.	no
Ryan Musgrove	Oklahoma Gas & Electric	yes
Samson Debass	EPRI	yes
Sanjib Som	PTT, LLC	yes
Waldemar Ziomek	PTI Transformers	yes
Adams Kayland	Prolec-GE Waukesha	no
Bernard LaBean Jr	Consumers Energy Company	no
Geraldo Magela Junior	Siemens Energy	no
Seoyun Song	Hyosung HICO	requested
Muhammad Abdullah Sohail	CES Transformers	requested
du XINGSHUANG	Sieyuan	requested
Dohyung Kim	HD Hyundai electric	no
Taylor Gray	Portland General Electric	no
T Hakim	Pennsylvania Transformer	no
Varun Goyal	Hydro One	no
Dongki Lim	Iljin electric	no
Fred Kirchner	HICO America	no
Orlando Benitez	Hyusong HICO	no
Emil Milea-Ciobanu	Delta Star	no

Document #: **638**

Document Title: **Qualification of Class 1E Transformers for Nuclear Power Generating Stations**

Chair: Craig Swinderman Vice Chair Robert Allison
Secretary: Dominic Pollaro Percent Complete: 90%

Meeting Date: Monday, October 20, 2025 Time: 11:00 AM- 12:15 PM
Location: Hyatt Regency; Coconut Point Resort, Bonita Springs, Florida

Current draft being worked on: 4.0 Dated: October 2025
PAR Expiration date: December 31, 2027

Attendance: Members:	11
Guests:	23
Guests requesting membership:	10
Total*:	<u>34</u>

* A list of attendees is included at the end of these minutes.

Meeting Minutes / Significant Issues / Comments:

1. Meeting was called to order at 11:00am by Chair Craig Swinderman.
2. Presentation of Agenda:
The agenda for the meeting was submitted for review in advance of the meeting.
3. Presentation of IEEE Standards Slides:
IEEE Essential Patent Slides, Copyright policy and IEEE Working Group meeting guidelines were presented, and no issues received from the attendees.
4. Distribution of attendance sheets:
 - a. Attendance was taken with a paper roster.
 - b. Please send an email to craig.swinderman@meppi.com with the subject: P638 EMAIL to be added to the P638 email list.

5. Checking the Quorum:
 - a. 11 out of 13 members were in attendance of the meeting so quorum was achieved.
6. Approval of the Meeting Minutes from Denver Spring 2025 and Agenda for Fall 2025:
 - a. Approval of the Spring 2025 meeting unapproved minutes
 - i. David Murray motioned to approve.
 - ii. Robert Allisson seconded.
 - iii. Motion was carried unanimously with no objections or abstentions. – Approved.
 - b. Approval of the Fall 2025 agenda
 - i. Robert Allison motioned to approve.
 - ii. Grace Yuan seconded.
 - iii. Motion was carried unanimously with no objections or abstentions. – Approved.
7. Chair announcements:

The PAR for revision of 638 was approved on December 6, 2023, and will expire on December 31, 2027. The target date for completing the updated standard is early 2026 for submittal to start the ballot process.
8. Old work: Reviewing the latest draft of IEEE P638

Focus has been looking at the two related standards to 638 standard for qualification of Class 1E Equipment and revising P638 to be in line with the latest revisions of the following documents:

IEEE/IEC 60780-323 published 2016

IEEE/IEC 60980-344 published 2020

P638 Document in Section 3 Review – added Abbreviations in section 3.2 in order to match terminology with IEEE/IEC 60980-344:

- OBE/ S1
- RRS
- SSE / S2

Draft 4 of IEEE P638 will be posted on Power Transformers Subcommittee web page.

MOTION TO APPROVE DRAFT 4 638

Motion: Robert Allisson

Second: Joe Tedesco

No objections to unanimous approval, motion approved

As the P638 document has been revised by the working group, and the work is now completed. The timeline for the remaining work for the Working Group was discussed. It was recommended for IEEE P638 to proceed to the balloting process.

MOTION TO VOTE TO PROCEED TO BALLOT FOR PRESENT DRAFT 638 TO BALLOT

Motion: Elizabeth Bray

Second: Robert Allisson

No objections to unanimous approval, motion approved

Vote Supermajority of 2/3 member approval needed to proceed to ballot

Received Unanimous Approval from Working Group

No objections, motion approved

IEEE 638 WG will proceed to request Power Transformers Subcommittee approval to proceed to ballot

MOTION TO FORM A COMMENT RESOLUTION GROUP

A motion was made to form a Comment Resolution Group (CRG) and give the CRG the authority to resolve editorial issues and comments where consensus is reached by the CRG. If any of the comments cannot be resolved to a consensus point, they will be brought back to the Working Group for resolution.

Motion: Robert Allisson

Second: David Murray

No objections, Unanimous Approval from Working Group for forming a CRG.

REQUEST FOR VOLUNTEERS TO BE PART OF THE COMMENT RESOLUTION GROUP

The following people requested to be part of the Comment Resolution Group for IEEE P638:

1. Robert Allison
2. Sami Debass
3. Joe Tedesco
4. Elizabeth Bray
5. Ryan Musgrove
6. Yeounsoo Kim
7. Grace Yuan
8. Craig Swinderman
9. Thang Hochanh
10. Manpreet Singh

Next Meeting: Ft. Worth, TX on Monday, March 23, 2026.

MOTION TO ADJOURN

Motion: Elizabeth Bray

Second: Robert Allisson

Submitted by: Craig Swinderman Date: October 23, 2025

List of Meeting Attendees at Fall '25 Meeting, including affiliation & voting member status.

LAST NAME	FIRST NAME	COMPANY	ROLE
Adams	Kayland	Prolec GE Waukesha	Guest
Allison	Robert	Dominion Energy	Member
Beaudoin	Jason	Weidmann	Guest
Bray	Elizabeth	Southern Company	Member
Chu	Matt	Shihlin Electric	Guest
Crockett	Janet	Fayetteville PWC	Guest

Cruz Valdes	Juan Carlos	Prolec GE	Guest
Debass	Sami	EPRI	Guest
Elnor	Abdalla	Enercon	Guest
Fenton	Roger	Fenton Solutions	Guest
Groons	Brad	NATS	Guest
Gubta	Sachin	Pennsylvania Transformer	Guest
Hochanh	Thang	Dominion Energy	Guest
Jarosz	Partycja	IEEE SA Staff	Guest
Jeong	Chan Min	HD Hyundai Electric	Guest
Kim	Yeounsoo	JST Power Equipment	Member
Kirchner	Fred	HICO America	Guest
Li	Weijun	Braintree Electric Light Dept.	Member
Lopes	Ricardo	Efacec	Member
Milea-Ciobanu	Emil	Delta Star Inc.	Guest
Murray	David	TVA	Member
Musgrove	Ryan	Oklahoma Gas & Electric	Member
Phajm	Thien	Siemens Energy	Guest
Pollaro	Dominic	Voltyx	Member
Rato	Nuno	Efacec	Guest
Seetaram	Alwala	Kiewit	Guest
Singh	Amitkumar	Con Edison	Guest
Singh	Manpreet	Constellation Energy	Guest
Swinderman	Craig	Mitsubishi Electric	Member
Tedesco	Joseph	Hitachi Energy	Member
Tyagi	Ashi??	Siemens Energy	Guest
Whitten	Christopher	Hitachi Energy	Guest
Yuan	Asam	Shihlin Electric	Guest
Yuan	Grace	Hitachi Energy	Member

Working Group C57.135 - IEC/IEEE 60067-57-135

Chair: Ewald Schweiger

Secretary: Richard von Gemmingen

Guide for the Application, Specification and Testing of Phase-Shifting Transformers

1. Meeting was called to order at 1:45 PM (EDT) on Monday October 20th, 2025 with Welcome & Chair's remarks.
2. Details about attendance:
 - Attendance: 33
 - Members: 10
 - Guests: 23
3. QR code for electronic sign-in was used instead of paper roster.
4. Agenda was displayed.
5. Call for essential patents
 - IEEE slides on essential patents have been provided in the meeting invitation, posted on the internet and were shown and a call for essential patents was made.
→ No essential patents or issues were reported.
6. Code of Ethics and Conduct
 - IEEE slide on code of ethics and conduct was reviewed.
7. Copyright policy
 - Slides of the IEEE copyright policy have been provided in the meeting invitation, posted on the internet and were shown and request made to identify any potential copyright issues.
8. IEEE-SA "individual process" reviewed.
9. Membership Roster displayed.
10. Quorum check
 - Total number of members is 27 requiring 14 members for quorum.
 - Initial count had 12 members in attendance. Quorum was NOT achieved.
11. Without quorum, agenda could not be approved by Working Group members.
12. Without quorum minutes from Spring 2025 meeting in Denver could not be approved.
13. Discussion of the official PSRC (Power System Relaying and Control Committee) request for co-sponsor and draft sharing with WG C57.135- on Implications, consequences and challenges (e.g. to the procedure – alignments – liaisons – time schedule ...) and the following summary was presented:

Co-Sponsor and draft sharing:

C57.135 – Guide for Phase-Shifting Transformers (dual logo IEC/IEEE 60076-57-135)

- Contains material within PSRC scope.
- PSRC to act as joint sponsor (non-lead) in revision.
- Seeks access to current version and drafts to begin review.
- PAR not yet updated to reflect PSRC joint sponsorship.

Draft sharing

IEEE/IEC 60076-57-1202 – Standard for Phase-Shifting Transformers (dual logo):

- PSRC experts offer valuable input on protection design, impedance testing, and transformer configuration.
- Liaison relationship established for harmonization.
- Coordination between both WGs to reduce overlap and align content.

Draft sharing

C37.245, Guide for Protective Relaying of Phase-Shifting Transformers.

- PSRC seeks reciprocal draft sharing with transformer WGs to ensure consistency across all three documents. May / September in person meetings and January is hybrid.

14. Discussion continued on co-sponsorship and draft sharing

- Clarification on initial meeting with PSRC requesting co-sponsorship and draft sharing, and PSRC's position about reciprocal draft sharing.
This was discussed with PSRC, and we have been told that they are receptive:
 - IEEE PM added additional clarification of IEEE SA on co-sponsoring and document sharing:
 - Question about votes and balloting? Who is qualified to be part of the ballot comment Resolution.
 - IEEE PM answered that liaisons and co-standards are two different entities:
 - a. Co-sponsors can share PAR and comments.
 - b. Co-sponsorship does not impact the established CRG process.
 - c. Co-sponsorship is not a requisite to have liaisons. You can have liaisons without co-sponsorship.
 - Based on previous discussions the question was raised if protection has a place in our guide since PSRC has a dedicated guide C37.245.
 - It was re-iterated that with co-sponsor arrangement this working group is in driver's seat. With draft sharing, PSRC would be invited to review next draft revision before any PAR revision takes place.
 - It was stated that anyone in the PSRC standard working group C37.245 can join our working group and get link to documents revision notifications.
 - If protection is not part of our guide, then reference to C37.245 will be helpful and strongly recommended.
 - Co-sponsorship would keep PSRC involved, and the PST related documents linked and synchronized.
 - The opinion was raised that the development of the protection system should be in the hands of the experts within PSRC within the guide C37.245.
 - It was indicated that CT's and combinations need to be used for coordination and a guide for users should let them know as a help for PST customers.
- b. Motion:
- Markus Stank moved to have Protection removed from the "purpose" in the PAR of C57.135:
 - Sanjay Patel provided the Second:

- c. Contributions to the debate
 - It was indicated that PST has to have correct CT coordination and there are several parties needed, like Customer's experts on electrical and protection and the manufacturer.
 - It was stated, that CT protection is unique to almost all users. Suggested a statement that CT coordination must be considered with customer.
 - It was indicated that there is still a need to provide information on what is required to protect transformer and coordination.
 - It was asked how protection of a PST is different than for a normal transformer. General discussion was that it is not.
 - IEEE PM indicated if there is a change in Title, Scope or Purpose then IEC must agree.
 - IEC was represented in attendance and would agree to changes.
 - Ryan Musgrove indicated we cannot vote on PAR without quorum so this will have to go to an e-vote.
- d. Motion:
 - Ryan Musgrove made a motion to approve Draft Sharing with PSRC.
 - Sanjay Patel provided the second.
- e. Contributions to the debate
 - Clarification about the draft sharing process took place.
- f. Motion:
 - Ryan Musgrove made motion to approve co-sponsorship with C37.245 for reasons of keeping standards coupled and linked.
 - Sanjay Patel provided the second.
- g. Contributions to the debate
 - It was discussed if co-sponsorship is needed and if there is a risk of de-coupling if no co-sponsorship is established.
 - The opinion was raised that co-sponsor provides added benefit of renewed link between documents in case of renewal.
 - The question was raised regarding how removing the protection from the document would impact the request for co-sponsorship..
- h. Motion:
 - Kevin Juchem moved to request draft sharing.
 - Ryan Musgrove provided second.
- i. Motion:
 - Ryan Musgrove moved to request reciprocal draft sharing with PSRC WG C37.245 for reasons of keeping standards coupled and linked.
 - Markus Stank provided second.
- 15. Adjournment
 - Meeting adjourned at 3:00 PM.
- 16. Next meetings (planned):
 - In-person meeting S26 – March 22-26, 2026 in Ft Worth, TX

Respectfully submitted,

Ewald Schweiger – WG Group Chair
Richard von Gemmingen – WG Secretary

List of attendees for this meeting:

Last name	First name	Company / Affiliation	Status
Albacete	Karina	Siemens Energy	G
Alwala	Seetaram	Kiewit	G
Barker	Sean	Hitachi	G
Beaudoin	Jason	Weidmann	G
Calitz	David	Siemens Energy	G
Colopy	Craig	EATON	G
Elnor	Abdalla	Enercon Services Inc	G
Gruskiewicz	Samuel	GE Vernova	G
Hampton	Kevin	Siemens Energy	G
Jarosz	Patrycja	IEEE SA	G
Jeong	chanmin	HD hyundai	G
Juchem	Kevin	Hitachi Energy Germany AG	M
Kaineder	Kurt	Trench Group	M
Lembacher	Stefan	Siemens Energy	G
Li	Weijun	Braintree Electric Light Department	G
Magela Junior	Geraldo	Siemens-Energy	G
Mendez	Omar	Prolec	M
Musgrove	Ryan	Oklahoma Gas & Electric	M
Natale	Anthony	HICO America	G
Patel	Sanjay Y.	Royal Smit Transformers	M
Ploetner	Christoph	Siemens Energy	M
Reed	Scott	MVA	G
Schindler	Stefan	Maschinenfabrik Reinhausen	G
Schrammel	Alfons	Siemens Energy	M
Schweiger	Ewald	Siemens Energy	M
Skeik	Ahmad	Crosslink Technology Inc.	G
Stank	Markus	Maschinenfabrik Reinhausen	M
Staya	Mamoon	Hitachi Energy	G
Thomas	Scott	Hitachi Energy	G
Topko	Vasily	ZTZ Services	G
Vary	Robert	Maschinenfabrik Reinhausen	G
von Gemmingen	Richard	Dominion Energy	M

Walmsley	Jonathan	GE Vernova	G
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Working Group 60076-57-1202

Chair: Ewald Schweiger

60076-57-1202

**IEC/IEEE International Standard Power Transformers Part 57-1202:
Liquid immersed phase-shifting transformers**

- 1) Meeting started at 1:45 PM (EDT) on Tuesday October 21st.
- 2) This was the third meeting as WG (Working Group).
 - Attendance: 32
 - Members: 7
 - Guests: 25
- 3) QR code for electronic sign-in was used instead of paper roster
- 4) Call for patents & Copyright statement
 - The slides on essential patents from IEEE have been uploaded on the internet and were presented during the meeting. A call for essential patents was made.
→ No essential patents or issues were reported.
 - The slides on IEEE copyright policy from IEEE have been uploaded on the internet and were presented during the meeting. A call for essential patents was made.
→ No issues were reported.
 - The slides on “Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct” have been presented.
- 5) Establish quorum
 - A quorum was achieved.
 - Total number of members is 13 requiring 7 members for quorum.
 - 7 members were present establishing quorum.
- 6) Approval of agenda
 - a) The Meeting Minutes were sent out via email and posted on the [PTSC website](#)
 - b) Motion to approve agenda was made by Markus Stank and second by Alfons Schrammel.
No discussion or objections were made.
 - c) Motion was carried unanimously with no objections or abstentions.
- 7) Approval of meeting minutes of the previous meeting in Denver on March 25th, 2025
 - a) The Meeting Minutes were posted on the [PTSC website](#).
 - b) Motion to approve agenda was made by Sanjay Patel and second by Markus Stank.
No further discussion or objections were made.
 - c) Motion was carried unanimously with no objections or abstentions.
- 8) Discussion of the official PSRC (Power System Relaying and Control Committee) request for draft sharing with WG 60076-57-1202- on Implications, consequences and challenges (e.g. to the procedure – alignments – liaisons – time schedule ...) and the following summary was presented:

Draft sharing

IEEE/IEC 60076-57-1202 – Standard for Phase-Shifting Transformers (dual logo):

- PSRC experts offer valuable input on protection design, impedance testing, and transformer configuration.
- Liaison relationship established for harmonization.
- Coordination between both WGs to reduce overlap and align content.

Draft sharing

C37.245, Guide for Protective Relaying of Phase-Shifting Transformers.

- PSRC seeks reciprocal draft sharing with transformer WGs to ensure consistency across all three documents. May / September in person meetings and January is hybrid.

9) Motion:

- Sanjay Patel made a motion to approve sharing standard drafts during the revision process with the PSRC Task Force.
- Markus Stank provided the second.
- There was no objection to unanimous approval of the working group sharing drafts during the revision process.

10) Motion:

- Kevin Juchem made a motion to request draft sharing from C37.245 TF during their revision process,
- Sanjay Patel provided the second.
- There was no objection to unanimous approval. The motion carried.

11) Contributions to the debate

- There was no interest of the WG in becoming a co-sponsor in C37.245.

12) Kevin Juchem (IEC Convenor as well), presented status update on 60076-57-1202 suggested changes received.

- He will implement the changes and create the first draft.
- As soon as the draft becomes available it also will be shared with Protection Relay Committee.

13) Planned next steps

- a. **Please Continue to review** and look for duplication, errors, corrections needed and improvements (Standard posted – PTSC site).
Volunteers are requested to reach out to the ones who took over tasks and / or officers.
- b. Collection of feedback (via email)

14) The meeting was adjourned at 2:21 PM (EDT)

15) Next meetings (planned):

- In-person meeting S26 – March 22-26, 2026 in Ft Worth, TX.

Respectfully submitted,
Ewald Schweiger - WG Chair

List of attendees for this meeting on the next page

List of attendees for this meeting:

Last Name	First name	Affiliation	Status
Albacete	Karina	Siemens Energy	G
An	KyungChan	Hyosung	G
Barker	Sean	HITACHI	G
Beaudoin	Jason	Weidmann	G
Bohrn	Josh	POWER ENGINEERS, INC.	G
Chan	Vivian	Hitachi	G
Elnor	Abdalla	Enercon Services Inc,	G
Fedor	Ken	SGB-Smit Group	G
Hampton	Kevin	Siemens Energy	G
Janakiraman	Balaji	Virginia transformers corp	G
Juchem	Kevin	Hitachi Energy Germany AG	M
Kadar	Laszlo	Laszlo & Associates Inc	G
Kirchner	Fred	HICO America	G
Lembacher	Stefan	Siemens Energy	G
Li	Weijun	Braintree Electric Light Department	G
Lopes	Ricardo	Efacec	G
Magela Junior	Geraldo	Siemens-Energy	G
Mendez	Omar	Prolec	M
Musgrove	Ryan	Oklahoma Gas & Electric	M
OMalley	Anastasia	Con Edison NY	G
Pedro	Pedro	Efacec Energia	G
Ploetner	Christoph	Siemens Energy	M
Rato	Nuno	Efacec Transformers	G
Sanchez Rodriguez	Jesus	Vertiv	G
Sarkar	Amitabh	Virginia Transformer Corporation	G
Schrammel	Alfons	Siemens Energy	M
Schweiger	Ewald	Siemens Energy	M
Stank	Markus	Maschinenfabrik Reinhausen	M
Templeton	James	Independent Consultant	G
Torchia	Leonard	PSE&G	G
Vary	Robert	Maschinenfabrik Reinhausen	G
Walmsley	Jonathan	GE Vernova	G

WG for the Revision of C57.12.10

IEEE Standard Requirements for Liquid-Immersed Power Transformers

3:15 p.m. – 4:30 p.m. Eastern Time, Monday, October 20, 2025

Hyatt Regency Coconut Point, Bonita Springs, Florida, USA

Unapproved Meeting Minutes

WG Chair Scott Digby called the meeting to order at 3:15 p.m., Monday, October 20, 2025. As this was the third meeting of this new WG, the vice-chair role has not yet been established or filled. WG Secretary is Juan Castellanos.

Total Attendance was:	93
Members	25
Guests requesting Membership:	18
Guests not requesting membership:	50

The total WG membership stands at 60, so quorum was not achieved. The meeting attendance list is included at the end of these minutes.

The meeting agenda and minutes from the previous meeting in Denver were not approved due to the lack of quorum. Attendance rosters were circulated. The WG Chair made the requisite Call for Patents and there was none noted by those present. The WG Chair presented the IEEE-SA Copyright Policy slides as well as the IEEE-SA activity participant behavior slides.

During the meeting, the chairman explained that although the PAR expires Dec.31, 2028, the standard expires Dec.31, 2027, therefore the group will look to have the work done by the end of 2026 and go for SA balloting during 2027.

From the results of the survey on the circulated draft 1 of the standard, it remains 8 comments: 4 to be developed by group volunteers; 4 carried over for today's evaluation. Additionally, 7 new comments were received since last meeting in Denver that were discussed today as well.

Of the 11 comments discussed during the meeting, the following resolutions were agreed based on the comment number from working Spreadsheet:

#21.- Accepted, to remove parenthesis from the sentence.

#22.- Not accepted, for safety reasons to keep manhole diameter as it is (24"), include it's intended for human ingress, egress of the tank.

#38.- Not accepted, no support from the WG. To leave it to user's specs.

#23.- Accepted, to condense "liquid and/or winding" in just one section.

#25.- Accepted. Already complied in draft 1 of the document.

#33.- WG confirmed PRD flow refers to gas instead of liquid.

#34.- To ask PRD manufacturers what's the base for the gas flow value, look for an appropriate number to be included in the document.

#35.- Not accepted by the WG. Change to the text is not necessary.

#36.- Not accepted by the WG.

#37.- Accepted. To add a reference to "shutter valve" per IEC. To include it as an optional accessory to be required by spec. Stefan Schindler volunteered to draft a text. Chairman to provide him with the draft 1 for revision.

#39.- Partially accepted. To remove "a combination of" and left "valves shall be provided between..."

The next steps: to clean up editorial comments, prepare new clean draft 2, incorporate resolved comments, and get the input from volunteer groups working on 4 pending comments.

The next meeting to be in Fort Worth, TX in March 2026.

There being no new business, the meeting was adjourned.

Respectfully Submitted,

Juan Castellanos, Secretary WG

First Name	Last Name	Affiliation	Requested membership?
Alireza	Gorzin	Black and Veatch	Member
Anthony	Natale	Hico America	Member
Ashwini	Labh	Hitachi Energy	Member
Brad	Staley	Leeward Energy	Member
Didier	Hamoir	Transformer Protector Corp.	Member
Eduardo	García	Siemens Energy	Member
Garret	Bradshaw	Howard industries	Member
Garret	Sarkinen	Xcel Energy	Member
Giles	Bargone	FISO	Member
Jason	Beaudoin	Weidmann	Member
John	John	Virginia Transformer	Member
Juan	Castellanos	Protec GE	Secretary
Kayland	Adams	Protec GE - Waukesha	Member
Martín	Muñoz	Orto de Mexico	Member
Matthew	Webb	GE Vernova	Member
Peter	Zhao	Hydro One	Member
Richard	Von Gemingen	Dominion Energy	Member
Ryan	Musgrove	OG&E	Member

Saramma	Hoffman	PPL	Member
Scott	Digby	Duke Energy	Chair
Scott	Thomas	Hitachi Energy	Member
Thomas	Keels	Keelectric Engineering	Member
Tim	Dappen	Cargill	Member
Trenton	Williams	Powertech	Member
William	Boettger	Consultant	Member
Abdalla	Elnor	Enercon	Y
Aleksander	Loipur	Koncar	Y
Bill	Griesacker	Consultant	Y
Bill	Herron	Reinhausen	Y
Diego	Moloyena	Ecuatran	Y
Eric	Schiemann	The Southern Co.	Y
Fabian	Camilo Cala	Siemens Energy	Y
Javier	Arteaga	Undisclosed	Y
Laxman	Rapelly	Georgia Transformers	Y
Markus	Stank	Machinenfabrik Reinhausen	Y
Miguel	Fernandez	Beld	Y
Muhammad	Sohail	Trench Group	Y
Paul	Dolloff	EKPC	Y
Rakesh	Patel	Hitachi Energy	Y
Roger	Fenton	Undisclosed	Y
Wilerson	Calil	Hitachy Energy	Y
William	Solano	Voltyx	Y
Zan	Kiparizoski	Howard	Y
Alwyn	Vanderwalt	undisclosed	N
Anton	Koshel	Delta Star	N
Chanmhn	Jeong	HD	N
Christoper	Whitten	Reinhausen	N
Craig	Colopy	Retired from Eaton	N
Craig	Swinderman	MEPPI	N
David	Herrington	Undisclosed	N
David	Walker	undisclosed	N
Derek	Hollreh	Burns and McDonell	N
Dino	Kovacevic	Koncar	N
Dongi	Limm	Iljin	N
Dragana	Gasic	Koncar	N
Fred	Kirchner	Undisclosed	N
Goran	Milojevic	DV-power	N
Gustavo	Pfeilsticker	TSEA energia	N
Hector	Garza	Orto	N
Huan	Dinh	Hitachi Energy	N
Jaeyoung	Park	Iljin	N
Janusz	Szczechowski	Reinhausen	N
Jeffrey	Door	HJ Enterprises	N

Joe	Nims	undisclosed	N
Joel	Valley	Faypwc	N
Jose Luis	Machain	Prolec	N
Juan Carlos	Castro	UNAL	N
Juan Carlos	Cruz Valdes	Prolec	N
Karina Monge	Albacete	Siemens Energy	N
Kevin	Hampton	Siemens Energy	N
Kris	Neild	Megger	N
Mamoon	Staya	Hitachi Energy	N
Muhammad	Imranyousaf	undisclosed	N
Nick	Jensen	undisclosed	N
Nihlas	Gustavson	Hitachi Energy	N
Nikolaus	Dillon	Dominion Energy	N
Nuno	Rato	Efacec	N
Olivier	Uhlmann	Reinhausen	N
Phillip	Miller	MLGUV	N
Ricardo	Castro Lopes	Efacec	N
Robert	Blake	Niagara Transformer	N
Robert	Vary	Reinhausen	N
Roberto	Borges	Hitachi Energy	N
Ronald	Hernandez	Doble	N
Ryan	Hogg	undisclosed	N
Samuel	Boursell	Kolektor	N
Sankey	Sherry	Oncor	N
Seoyun	Song	Hyosung	N
Stefan	Lembacher	Siemens Energy	N
Stefan	Suhinelles	Reinhausen	N
Taylor	Gray	PGN	N
Tiago	Bertran	Siemens Energy	N
Troy	Tanaka	Burns & McDonald	N

Power Transformers Subcommittee Working Group Report

Document #: C57.125
 Document Title: Guide for Failure Investigation, Documentation, Analysis and Reporting for Power Transformers and Shunt Reactors

Chair:	Hakan Sahin	Vice-Chair	Thomas Melle
Secretary	Adam Sewell	Percent Complete	100%

Current Draft Being Worked On: 1.0 Dated: February 2025
 PAR Expiration Date: December 31, 2027

Meeting Date: October 20, 2025 Time: 4:45pm – 6:00pm
 Location: Bonita Springs, FL, USA

Attendance:	Members	41 of 49
	Guests	84
	Guests Requesting Membership	(24)**
	Total*	125

*Attendance list for this meeting is shown at end of meeting minutes

Because WG approved to send draft to ballot, no new WG Members will be added. Member list as of Spring 2025 meeting is final WG list

Meeting Minutes / Significant Issues / Comments:

Meeting was called to order at 4:45pm, October 20, 2025 at Hyatt Regency Bonita Springs, FL, USA in Room: Calusa FGH (1).

1. Administrative

- a. IEEE Patent Policy and Call for Patents
 - No comments from group
- b. IEEE SA Copyright Policy
 - No comments from group
- c. Review of agenda
 - No comments from group
- d. Reminder on the purpose and the scope of the working group, and the timeline
 - The expectation from this WG is to review and update the document as it expires on 12/31/2025.
 - Projected Completion Date for Submittal to RevCom: Dec 2025
- e. Introductions of the attendees

- Attendance was taken by QR Code sign-in...no paper attendance sheets were passed out.
 - Name/affiliation was announced as attendees spoke during the meeting.
- f. Updated membership review and count for quorum
- 49 members and 35 were counted as present via hand count.
- 1) QUORUM ACHIEVED
- *Attendance list after meeting completed showed 41 members attended.*
 - Members are expected to attend and stay in the meeting so business can be conducted.
 - Because WG approved to send draft to ballot, no new WG Members will be added. Member list as of Spring 2025 meeting (with 49 members) is final member list
- g. Approvals of previous minutes and agenda:
- Approval of the agenda for Fall 2025
 - 1) MOTION to approve Fall 2025 agenda – T.Raymond, 2nd – S.Chambers
 - 2) No objection to unanimous approval – MOTION APPROVED
 - Approval of the Spring 2025 unapproved meeting minutes
 - 1) MOTION to approve Spring 2025 unapproved meeting minutes – H.Flores, 2nd – M.Saad
 - 2) No objection to unanimous approval – MOTION APPROVED
2. Old Business
- a. Final review of the draft document before submitting for ballot. Draft document contains editorial updates as well as the two sections which were approved but were not updated within the document. Details are in the Spring_25 meeting minutes.
3. New Business
- a. The chair announced that since the original PAR expired at the end of 2025, the WG and SC had approved a PAR extension in Spring 2025 meeting and that PAR extension was granted and now expires 12/31/2027.
- b. The chair reviewed the document with the WG and announced that the draft would be sent to ballot as the approval to send to ballot was made by the WG and SC at the Spring 2025 meeting.
- c. The chair reviewed the Comment Resolution Group member list and asked for suggestions on how best meet online before Spring 2026.
- It was suggested to use a poll for date/times of meetings with the CRG and pick most fitting based on poll results. The chair agreed with this suggestion.
 - CRG members: Samson Debass, Bruce Forsyth, Eduardo Garcia, Weijun Li, Tom Melle, Francis Mills, Ryan Musgrove, Timothy Raymond, Hakan Sahin, Amitabh Sarkar, Adam Sewell, Joshua Yun.
4. Next meeting: March 23, 2026 at Spring 2026 Transformers Committee Meeting scheduled for March 22-26 in Fort Worth, Texas, USA.
5. Close of meeting
- a. Meeting adjourned at 5:45pm
- Submitted by: Hakan Sahin Date: 11/5/2025

October 20, 2025 Meeting Attendance (RM = Request Membership - Because WG voted to send draft to ballot, no new WG Members will be added. Member list as of S2025 meeting is final WG list):

Last Name	First Name	Company (Affiliation)	Role
Adams	Kayland	Prolec-GE Waukesha	GUEST
Albacete	Karina	Siemens Energy	GUEST
Bertran	Tiago	Siemens Energy, Inc.	GUEST
Betancourt	Enrique	Prolec ge	MEMBER
Binder	Wallace	WBBinder@ieee.org	MEMBER
Blake	Robert	Niagara power transformer	GUEST
Boettger	William	Boettger Transformer Consulting LLC	MEMBER
Bolar	Sanket	Oncor Electric Delivery	MEMBER
Borges	Roberto	Hitachi Energy	GUEST
Botti	Michael	Hyosung HICO	GUEST-RM
Calitz	David	Siemens Energy	GUEST
Carreno Perez	Daniel	Hitachi Energy	GUEST
Carrizales	Juan Alfredo	PROLEC GE	GUEST
Chambers	Stuart	EPRI International	MEMBER
Chanda	Sudip	Delta Star Inc.	GUEST-RM
Cruz Valdes	Juan Carlos	PROLEC GE	GUEST
DaSilva	Roberto	Maschinenfabrik Reinhausen	GUEST
De la Garza	Mario	Hyundai Power Transformers	GUEST
Debass	Sami	EPRI	MEMBER
Diaconu	Dumitru C	Delta Star Inc	GUEST-RM
Dillon	Nikolaus	Dominion Energy	MEMBER
Dix	Larry	Quality switch	MEMBER
Draper	Zachary	Delta-X Research	MEMBER
Dulac	Hakim	Advanced Power Technologies	MEMBER
du	xingshuang	Sieyuan	GUEST
Elliott	Will	AEP SWPECO	GUEST
Elson	Eric	San Diego Gas & Electric	GUEST
Faur	Florin	Prolec-GE Waukesha	MEMBER
Fenton	Roger	Fenton Solutions	GUEST
Fernandez	Miguel	Braintree Electric Light	GUEST-RM
Flores	Hugo	Ermo-ECI	MEMBER
Fontana	Franco	Siemens Energy Transformers srl	GUEST
Forsyth	Bruce	Cargill	MEMBER
Furlanetto	Carlo	Siemens Energy	GUEST
Garcia	Eduardo	Siemens Energy	MEMBER
Garner	Joshua	RESA Powrr	GUEST
Gorzin	Alireza	Black & Veatch	MEMBER
Greaves	Brad	Weidmann Electrical Technology	GUEST
Hakim	Shamaun	Pennsylvania transformers	GUEST
Hampton	Kevin	Siemens Energy	GUEST
Hernandez-Mejia	Jean Carlos	Georgia Tech NEETRAC	GUEST
Hernandez	Ronald	Doble Engineering	MEMBER
Herrington	David	PTT/ Warranty Manager	GUEST
Hoffman	Saramma	PPL	GUEST
Hollrah	Derek	Burns & McDonnell	GUEST
Johnson	Christopher	Oncor	MEMBER
Joshi	Akash	Kinley Horn	GUEST-RM
Keels	Thomas A	kEElectric Engineering PLLC	GUEST-RM
Kim	Yeounsoo	JST power equipment	GUEST-RM
Klempner	Dmitriy	Southern California Edison	GUEST-RM
Kosedagi	Nihat	ERMCO	GUEST-RM
Kumar	Arvind	Delta star inc	GUEST-RM
Labh	Ashwini	Hitachi Energy	GUEST-RM
Lembacher	Stefan	Siemens Energy	GUEST
Li	Weijun	Braintree Electric Light Department	MEMBER
Lucas	Tiffany	Prolec GE Waukesha	GUEST
Machain	José Luis	Prolec GE	MEMBER
Magela Júnior	Geraldo	Siemens-Energy	GUEST
Mani	Balakrishnan	Delta star field service	GUEST-RM
Melle	Tom	High volt	MEMBER-ViceChair
Millan	Alexander	Siemens Energy	GUEST
Mills	Frans	Power engineers	MEMBER
Montanha	Juliano	Siemens Energy	MEMBER

Last Name	First Name	Company (Affiliation)	Role
Montoya	Francisco	Siemens Energy Transformers	GUEST
Murray	David	ENERCON	MEMBER
Musgrove	Ryan	Oklahoma Gas & Electric	MEMBER
O'Malley	Anastasia	Con Edison NY	MEMBER
Ortiz	Juan	Reinhausen	GUEST-RM
Patel	Monil	Pacific Gas and Electric	GUEST
Patel	Nitesh	Hyundai Power	GUEST-RM
Patel	Sanjay Y.	Royal Smit Transformers	MEMBER
Pedro	Pedro	Efacec Energia	GUEST-RM
Propts	Thomas	Dominion Energy	GUEST
Prunte	John	APC Construction	GUEST
Rapelly	Laxman	Virginia/Georgia Transformer Corporation	GUEST-RM
Raymond	Timothy	Inductive Reasoning	MEMBER
Richards	Alexander	Spearmint Energy	GUEST
Rodriguez	Jason	Siemens Energy	GUEST
Saad	Mickel	Hitachi Energy	MEMBER
Sahin	Hakan	Georgia Transformer	MEMBER-Chair
Sanchez Rodriguez	Jesus	Vertiv	GUEST-RM
Sarkar	Amitabh	Virginia Transformer Corporation	MEMBER
Scardazzi	Alaor	Siemens Energy	GUEST
Schleismann	Eric	Southern Company	MEMBER
Schrammel	Alfons	Siemens Energy	GUEST
Schwartz	Daniel	Quality Switch	MEMBER
Selvaraj	Pugal	Forgent Power	MEMBER
Sewell	Adam	Quality Switch	MEMBER-Secretary
Sewell	Jeremy	Quality Switch	GUEST
Sewell	Russell	Quality Switch	GUEST
Shaikh	AbdulMajid	Delta Star Inc	GUEST-RM
Sharma	Devki	Retired	GUEST
Shteyh	Ibrahim	Consultant	GUEST-RM
Singh	Amitkumar	Consolidated Edison Company of New York	GUEST-RM
Singh	Manpreet	Constellation Energy	GUEST
Snyder	Jason	FirstEnergy	GUEST
Solano	William	Voltyx	GUEST
Som	Sanjib	PTT, LLC	MEMBER
Spengler	Chelsea	Delta-X Research	GUEST
Staya	Mamoon	Hitachi Energy	GUEST
Steele	Hampton	TVA	GUEST
Stelmach	David	IntelliRent	GUEST
Swarna	Sunny	Virginia Transformer Corp	GUEST-RM
Sweetser	Charles	OMICRON electronics Corp. USA	GUEST
Tanaka	Troy	Burns & McDonnell	MEMBER
Tan	Jonathan	Northern Transformer	GUEST-RM
Tekyetim	Can	Hitachi Energy	GUEST
Torchia	Leonard	PSE&G	GUEST
Uhlmann	Olivier David	Reinhausen Canada Inc.	GUEST
Valley	Joel	Fayetteville PWC	GUEST
Van Der Walt	Alwyn	ECI	GUEST
Van Dreel	Cole	American Transmission Co	GUEST
Veeran	Kannan	Virginia/ Georgia Transformer	GUEST-RM
Verdolin	Rogerio	Verdolin Solutions	MEMBER
von Gemmingen	Richard	Dominion Energy	MEMBER
Wallach	David	Duke Energy	GUEST
Washburn	Alan	Burns & McDonnell	MEMBER
Woods	Deanna	PTTI	MEMBER
Wright	Chris	Industry	GUEST
Wright	Jeffrey	Duquesne Light	GUEST
Yadava	Jayram	Hitachi Energy	GUEST-RM
Yang	Fei	Hitachi Energy	GUEST
Yun	Joshua	Virginia Transformer Corp	MEMBER
Yu	Zhenquan	Sieyuan Toshiba transformer company	GUEST
Zaman	Malia	IEEE SA	GUEST

Power Transformers Subcommittee Working Group Report

Document #:	<u>C57.157</u>		
Document Title:	<u>Guide for Conducting Functional Life Tests on Switch Contacts Used in Insulating Liquid-Immersed Transformers</u>		
Chair:	<u>Adam M. Sewell</u>	Vice-Chair	<u>N/A</u>
Secretary	<u>Piotr Blaszczyk</u>	Percent Complete	<u>N/A</u>
Current Draft Being Worked On:	<u>N/A</u>	Dated:	<u>N/A</u>
	<u>PAR expires 12/31/2027</u>		
PAR Expiration Date:	<u>Std expires 12/31/2025</u>		
Meeting Date:	<u>21 October 2025</u>	Time:	<u>8:00am-9:15am</u>
Location:	<u>Bonita Springs, FL, USA</u>		
Attendance:	Members		<u>14 of 17</u>
	Guests		<u>37</u>
	Guests Requesting Membership		<u>(5)</u>
	Total*		<u>51</u>
* Attendance list for this meeting is shown at end of meeting minutes			
Minutes R01-03NOV2025			

Meeting Minutes / Significant Issues / Comments:

1. Meeting was called to order at 8:00am, October 21, 2025 at Hyatt Regency Coconut Point Resort- Blue Heron (1).
2. Presentation of Agenda
3. Presentation of IEEE Standards Slides
 - a. Call for Patent Claims & Copyright Notice
 - b. No comments from working group about any patent claims or copyright notice
4. Distribution of attendance sheets
 - a. Attendance was taken by QR Code sign-in...no paper attendance sheets were passed out.
 - b. Please send an email to adamsewell@ieee.org with the subject: C57.157 EMAIL to be added to the C57.157 email list
5. Checking the Quorum – 17 members so 9 needed for quorum.
 - a. 10 out of 17 members were in attendance of the meeting by hand count, so quorum was achieved. After meeting, the QR code sign in sheet showed 14 of 17 members attended.

6. Approval of the Fall 2025 Agenda and Spring 2025 Meeting Minutes.
 - a. MOTION was made by D. Schwartz and 2nd by J. Cruz Valdez to approve Fall 2025 Agenda & Spring 2025 Meeting Minutes.
 - No opposition to unanimous approval of the MOTION – APPROVED
7. Chair announcements
 - a. Current guide is set to expire December 31, 2025. PAR was created after the Spring 2023 meeting and has PAR Approval Date of 05 Jun 2023 and expiration of 31 Dec 2027.
 - b. Chair asked for volunteers to review the current guide
8. Old work
 - a. Chair reminded where he shared previous presentations that were used to develop this guide
 - Previous presentations and 2015 C57.157 standard on IEEE Collabratec and IEEE TC Power Transformers Subcommittee pages
 - b. Members of this group were tasked to review current guide and previous presentations before Spring 2026 meeting and make suggestions as to what recommendations they have for this guide
 - c. Attila Gyore (Midel) presented at the F24 meeting in St. Louis on topic of history, chemistry, standards applicable, and material compatibility of synthetic ester liquid and how is it different than mineral oil and natural ester liquids.
 - d. Presentation was made by F. Faur of his observations of the current guide at S24 meeting:

Summary

The purpose of the test described in C57.157 is to verify if the contacts of a tap changer would perform adequately over 30 years of its life.

The test makes the simplification hypothesis that the contact life depends on the thermal runaway due to the increased resistance of the contact points. The main conclusion after this test is that Ag-Ag contacts perform better than any other combination, and Sn plated contacts perform the worst.

While this is true, it is not the only practical option to mitigate the problem of overheating, and not the only cause of overheating. Also, the number of other causes that can trigger a contact failure is so high, that performing the test in every condition is impractical. Having passed the test in one configuration doesn't guarantee that the same contact or even switch will pass the test in another configuration.

Comments

(in the comments below, when I mention contact, I am referring to the entire body of a stationary or a moving contact, as opposed to the contact point as the sum of A-spots between 2 contacts)

1. Trapped hot oil
Sometimes, either the tap changer manufacturer or the transformer manufacturer adds extra barriers to increase dielectric strength. In this case, the hot oil created by the contact would keep overheating, accelerating the contact failure.
2. Different coefficient of thermal expansion
A long moving contact that operates close to its thermal capabilities, would thermally expand differently than the insulating material that separates the stationary contacts. That makes the contact points move slightly every time the temperature changes. Each time the contact moves, it breaks new areas of oxidation that accumulate around the contact points, increasing the electrical resistance and preventing oil cooling. The longer the contacts, the more predominant is this phenomenon.
3. Number of cycles
The test exclusively assesses the deleterious effects of the contacts' prolonged exposure to high temperatures, disregarding the cycle count in a heavy-duty switch application. In some of the documentation from the time the test was developed, it was *observed that most failures were in peaking, pulsing loads: Rectifier Loads, Motor Starting Loads, Furnace Supplies, or Emergency Generator Transformers*. No failures were observed in utility transformers

or units that had more “homogenized” loads. That means that an increased number of cycles might be more important than the current, temperature, and time itself.

4. Operating the tap changer
If a contact point is Ag-Cu, then, by operating it several times, part of the silver from AG contacts is smeared over the blank Cu contact. For this reason, pure Ag-Cu contacts don't exist.
5. Oil properties
Transformer oil can have different properties that affect contact cooling, gas generation, coke formation, etc. The transformer manufacturer decides what oil to use. I am not referring to structural differences like mineral vs. ester vs. silicone oils. I am referring to subtle differences like additives in the oil, inhibited vs. non-inhibited oil, etc. All those small changes may, among other things, affect oil thermal breakdown and the formation of film deposits and increase contact point resistance.
6. Spring force
Sometimes the springs in the contacts lose their compression force in a longer time than the 30 days of testing, leading to contact failure. The test would pass a contact that would fail in the real world with the same symptoms.
7. Insufficient contact section
The heat generated by the contact point itself couldn't be eliminated properly. Sometimes, just increasing the cross-section of the contact could solve the heat problem.
8. Cable & Cable lug heat sink
The section of the cables and cable lugs and the insulation over the cable affect the elimination of heat from the contacts, or they can even contribute to heating the contacts.
9. Water, gases, and contaminants
The test doesn't address the possible presence of water or gases in oil and their effect on the oxidation and aging of the oil. Those can affect the behavior of contacts at elevated temperatures more than the temperature itself.
10. Oxygen concentration
The oil behaves differently if the tank is sealed, has a nitrogen blanket, has a conservator, or is free breathing.

From the above observation, I think that this test has a similar kind of performance prediction ability to the standard temperature rise test from C57.131, but using more harsh conditions (longer test and higher temperature).

Slightly related to the above, in the standard C57.131 I think that it would be beneficial if we could add some comments about the testing conditions: the amount of oil, distance to the walls and oil surface, the length of cables in the oil, the thermal insulation of the tank, dielectric barriers, etc.

9. New Work

a. Synthetic ester testing for contacts

- Quality Switch (D.Schwartz) and Specialty Transformer Components (P.Blaszczyk) volunteered for their companies to work on setting up/performing testing using Synthetic Esters. T.Tillery also volunteered to support the testing by consultation.
- The group discussed which synthetic ester fluid to use for the test, and two types were suggested: MIDEL 7131, classified as K3 fire-safe class, and Cargill Envirotemp™ 200 (often referred to as E200), designed for free-breathing transformers and retrofit applications. Both of these fluids are widely recognized for transformer applications.
- After the meeting discussions about performing testing using this guide, N. Gustavsson and D. Sauer expressed interest in performing the test.

- The largest obstacle in regards to testing was discussed as getting samples of liquids to perform the testing. Testing per the guide is a 30 day test and a 50:1 volume of liquid to contact assembly.
- b. Create a draft 1.0 to review
- Need any input from members on recommended changes / adds / deletes to current guide standard.
 - F. Faur reviewed observations of the current guide at S24 meeting
- c. Quality of liquid was brought up during meeting.
- Discussions about adding oil quality checks before and after the testing of the contacts are performed.
 - Also a question of oil conditioning was brought up to see if that was needed for this test. The test in this guide is meant to simulate starting from a new transformer and simulating 30 years of life.
10. Next meeting: March 24, 2026 at Spring 2026 Transformers Committee Meeting scheduled for March 22-26 in Fort Worth, Texas, USA.
11. Close of meeting
- a. Meeting adjourned at 8:55am
- Submitted by: Adam Sewell Date: November 3, 2025

Meeting Attendance October 21, 2025 (RM = Request Membership):

LAST NAME	FIRST NAME	COMPANY/AFFILIATION	ROLE
Albacete	Karina	Siemens Energy	GUEST
Allison	Robert	Dominion Energy	GUEST
Ayers	DonaldE.	Ayers Transformer Consulting	GUEST
Blaszczyk	Piotr	Specialty Transformer Components	MEMBER
Bradford	Eric	GE Vernova	GUEST
Brzoznowski	Steven	BPA	GUEST
Colopy	Craig	EATON	GUEST
Cruz Valdes	Juan Carlos	PROLEC GE	MEMBER
De la Garza	Mario	Hyundai Power Transformers	GUEST
Dix	Larry	Quality Switch	MEMBER
Faur	Florin	Prolec-GE Waukesha	MEMBER
Fernandez	Miguel	Braintree Electric	GUEST-RM
Flores	Hugo	Ermco-ECI	GUEST
Gardner	James	Prolec-ge Waukesha	GUEST
Garza	Hector	Orto	GUEST
Greaves	Brad	Weidmann Electrical Technology	GUEST
Gustavsson	Niklas	Hitachi Energy	MEMBER
Harley	Jack	FirstPower	GUEST
Hegerle	Steven	Howard Industries	GUEST
Heiden	Kyle	Eaton	GUEST
Herrington	David	PTTI/Warranty Manager	GUEST
Hopkinson	Phil	HVOLT Inc	GUEST-RM
Johnson	Reeve	Hitachi Energy	GUEST
Kim	Dohyung	HD Hyundai electric	GUEST
Labh	Ashwini	Hitachi Energy	MEMBER
Li	Weijun	Braintree Electric Light Department	GUEST-RM

LAST NAME	FIRST NAME	COMPANY/AFFILIATION	ROLE
Machain	José Luis	Prolec GE	GUEST
Mantoan	Francis	Siemens Energy	GUEST
Mikulecky	Filip	Koncar Power Transformers Ltd.	GUEST
Mills	Francis	POWER Engineers	GUEST
Munoz	Martin	Orto	GUEST-RM
Musgrove	Ryan	Oklahoma Gas & Electric	MEMBER
Nims	Joe	Allen & Hoshall	GUEST
Novosel	Janko	Koncar power transformers	GUEST
Pereira	Luis	TBEA power transformers	GUEST
Perez	Marcelino	Prolec	GUEST
Plisic	Goran	Koncar Power Transformers Ltd	GUEST
Pruente	John	APC Construction	GUEST
Ronchi	Rodrigo	WEG Transformers México	GUEST
Sauer	Daniel	Eaton	GUEST
Schwartz	Daniel	Quality Switch	MEMBER
SEWELL	ADAM	QUALITY SWITCH	MEMBER
Sewell	Jeremy	Quality Switch	MEMBER
SEWELL	RUSSELL	Quality Switch	GUEST
Smith	Jimmy	Howard Industries	MEMBER
Solano	William	Voltyx	MEMBER
Tillery	Tim	TCI Sales	MEMBER
Van Dreel	Cole	American Transmission Co.	GUEST
Vary	Robert	Reinhausen	GUEST
Verdolin	Rogério	Verdolin S	GUEST-RM
Whitten	Christopher	Reinhausen	MEMBER

Working Group Meeting for IEEE Standard PC57.17

Denver, Colorado, USA Meeting – October 21, 2025 11:00-12:15 pm EST

Chair: Jason Varnell

Vice Chair: William Herron

Secretary: Trenton Williams

1. The meeting was called to order at 11:00 AM EST.
2. There were 20 active participants present, which consisted of 9 of the 23 members. Quorum was not achieved.
3. One (1) participant requested membership was granted membership due to proper attendance. After the meeting eight (8) members were moved to guest status due to not meeting the attendance requirements. Therefore, the new membership total after the F25 meeting is 16.
4. The chair reviewed the IEEE patent slides and the group made no patent claims.
5. The chair reviewed the copyright policy with the group.
6. **Old Business:** Review and resolve comments from Sanjib Som (PTTI) from previous meeting on Draft 2.0:
 - i. Subclause 4.4: Working group consensus was achieved for addressing the comment and will be included in Draft 2.2 for working group approval.
 - ii. Subclause 7.1: Working group consensus was achieved for addressing the comment and will be included in Draft 2.2 for working group approval.
 - iii. Subclause 7.2: Working group consensus was achieved for addressing the comment and will be included in Draft 2.2 for working group approval.
7. **New Business:**
 - a. The Chair reviewed with the group the previously submitted straw ballot comments on Draft 2.1 as time permitted. The straw ballot closed on August 15, 2025 with only three (3) responses. There were a total of 16 comments. The working group agreed to resolutions to the first 9 of 16 comments. The resolutions will be incorporated into Draft 2.2.
 - i. Subclause 4.5: Comment submitted by Alireza Gorzin (Black & Veatch). Working group consensus was achieved for addressing the comment and will be included in Draft 2.2 for working group approval.
 - ii. Table 5: Comment submitted by Alireza Gorzin (Black & Veatch). Working group consensus was achieved for addressing the comment and will be included in Draft 2.2 for working group approval.
 - iii. Introduction: Comment submitted by Laszlo Kadar (Laszlo & Associates Inc). The chair will revise the introduction to include a summary of major changes from previous revision and will be included in Draft 2.2 for working group approval.
 - iv. Subclause 1.1: Comment submitted by Laszlo Kadar (Laszlo & Associates Inc). Working group consensus was achieved for addressing the comment and will be included in Draft 2.2 for working group approval.
 - v. Table 1: Comment submitted by Laszlo Kadar (Laszlo & Associates Inc). Working group consensus was achieved for addressing the comment and will be included in Draft 2.2 for working group approval.
 - vi. Subclause 6.2: Comment submitted by Laszlo Kadar (Laszlo & Associates Inc). Working group consensus was achieved for addressing the comment and will be included in Draft 2.2 for working group approval.
 - vii. Subclause 8.1: Comment submitted by Laszlo Kadar (Laszlo & Associates Inc). Working group consensus was achieved for addressing the comment and will be included in Draft 2.2 for working group approval.
 - viii. Subclause 8.7: Comment submitted by Laszlo Kadar (Laszlo & Associates Inc). Working group consensus was achieved for addressing the comment and will be included in Draft 2.2 for working group approval.
 - ix. Subclause 9.2.5: Comment submitted by Laszlo Kadar (Laszlo & Associates Inc). Working group consensus was achieved for addressing the comment and will be included in Draft 2.2 for working group approval.

- x.** Stephen Shull agreed to redraw and correct Figure 1, Figure 2, and Figure C.2 prior to the next online working group meeting.
 - b.** The remaining seven (7) comments will be attempted to be resolved by an online meeting before the Spring 2026 Transformers Committee Meeting. Additionally, if the working group successfully resolves the remaining comments then the working group will seek subcommittee approval to go to ballot with Draft 2.2 via e-ballot.
- 8. The next working group meeting will be in Fort Worth, TX, USA during the Spring 2026 Transformers Committee Meeting.
- 9. The meeting adjourned at 12:15 PM EST.

Attendance Record:**Status as of****10/21/2025****(Prior to F25**

Meeting)	Last Name	First Name	Affiliation
MEMBER	BARGONE	GILLES	FISO
GUEST	BLAKE	ROBERT	NIAGARA POWER TRANSFORMER
GUEST	BRZOZNOWSKI	STEVEN	BPA
GUEST	FOLDI	JOESPH	F&A INC.
GUEST	HERRINGTON	DAVID	PTTI/WARRANTY MANAGER
VICE-CHAIR	HERRON	WILLIAM	REINHAUSEN
MEMBER	KADAR	LASZLO	LASZLO & ASSOCIATES
MEMBER	KENNEDY	SHELDON	SHELDON KENNEDY ENGINEERING PLLC
GUEST	KIM	DOHYUNG	HD HYUNDAI ELETRIC
GUEST	MARTINEZ	DANIEL	JFE CANADA
GUEST	MILLS	FRANCIS	POWER ENGINEERS
GUEST	MURCIA	FREDY	SIEMENS ENERGY
MEMBER	MUSGROVE	RYAN	OG&E
GUEST	PFEILSTICKER	GUSTAVO	TSEA ENERGIA
GUEST	QUINONES	MANUEL	GE VERNOVA
MEMBER	SAUER	DAN	EATON
MEMBER	SOM	SANJIB	PTTI
GUEST	THOMAS	SCOTT	HITACHI ENERGY
CHAIR	VARNELL	JASON	DOBLE ENGINEERING CO.
SECRETARY	WILLIAMS	TRENTON	ADVANCED POWER TECHNOLOGY



Working Group C57.140 Meeting

Fall 2025 Meeting

Calusa DE, Bonita Springs, FL

Tuesday, October 21st, 2025

1:45PM – 3:00 PM Eastern Time Zone

Chair: Marcos Ferreira

Vice-Chair: Jeremiah Bradshaw

Secretary: Traci Hopkins

UNAPPROVED MINUTES

● **SUMMARY:**

Meeting started at 13:49

Marcos Ferreira reviewed the Agenda, Call for patents, copyright policy and participant behaviour. There were 79 attendees, 16 members and 63 guests. Quorum was not achieved as we needed 21 of 40. A representative of each Task Force presented their comparison findings of their assigned IEEE Std. There was a recommendation by Jinesh Malde to form a seventh (7th) Task Force to compare C57.166 to C57.140. He has volunteered to lead the Task Force, Scott Reed and Stephanie Mabrey have volunteered to assist Jinesh with this review. The meeting was adjourned at 14:38.

● **MINUTES:**

● **Recap of Prior Meeting**

- PAR Modification.

● **Voting Form Discussion**

- Results

● **Topic: Call For Patents**

- No participants spoke up about patent claims.

● **Topic: Review of Task Force Findings for document comparison**

- Task Force 1 (Comparison): C57.140 vs C57.152 presented by Dominic Pollaro
- Task Force 2 (Comparison): C57.140 vs C57.170 presented by Evgenii Ermakov
- Task Force 3 (Comparison): C57.140 vs C57.125 presented by Juan Ortiz
- Task Force 4 (Comparison): C57.140 vs C57.637 presented by Ed TeNyenhuis
- Task Force 5 (Comparison): C57.140 vs C57.143 presented by Derek Hollrah
 - Discussion from Roger Fenton to consider predominance of online testing; are we at the point to consider online new technologies?
- Task Force 6 (Comparison): C57.140 vs C57.93 presented by Marcos Ferreira
 - Discussion by Scott Reed recommended to refer to C57.93 (and other documents) rather than include tables and figures as those can change as documents are updated.

● **Topic: Task Forces for review of other related documents**

- Task Force: C57.166
 - Jinesh Malde (Shell) [TF Lead]
 - Scott Reed (MVA)

- Stephanie Mabrey (AVO Diagnostics)

- **ATTENDANCE RECORD:**

- Total of 79 attendees (16 Members & 63 Guests)
- Attendance was taken using QR code
- Spreadsheet of participants available upon request

- **NEXT IN-PERSON MEETING:**

- To be held during the Spring PES Transformers Committee Meeting March 22-26, 2026 in Ft. Worth, TX, USA

- **ACTION ITEMS:**

- Officers:
 - Email to IEEE SA for obtaining the current draft working version of C57.166 documents for TF 7 to review.
- Task Force Leads:
 - TF 7 - Establish meetings with necessary participants to review the assigned documents for comparison.

Attendance list:

Alaor	Scardazzi	Siemens Energy	Voting Member	
Alwyn	VanderWal	ECI	Voting Member	
Brad	Greaves	Weidmann Electrical Technology	Voting Member	
Derek	Hollrah	Burns & McDonnell	Voting Member	
Dmitriy	Klempner	Southern California Edison	Voting Member	
Ed	Tenyenhuiss	Hitachi Energy	Voting Member	
Evgenii	Ermakov	Hitachi Energy	Voting Member	
Jesse	Duffy	Nashville Electric Service	Voting Member	
Jonatha	Sinclair	Black and Veatch	Voting Member	
Marcos	Ferreira	Engineering Consultant Services	Voting Member	
Mickel	Saad	Hitachi Energy	Voting Member	

Mike	Nolte	Kiewit	Voting Member	
Niklas	Gustavsson	Hitachi Energy	Voting Member	
Scott	Reed	MVA	Voting Member	
Stephanie	Mabrey	AVO Diagnostics	Voting Member	
Traci	Hopkins	H2scan	Voting Member	
Dominic	Pollaro	Nass	Voting Member	I'm requesting membership
Neal	Hamer	Supplier - PES Member	I'm not listed.	I'm requesting membership
Carly	Bych	Siemens Energy	I'm not listed.	
Chelsea	Spengler	Delta-X Research	I'm not listed.	
Christopher	Johnson	oncor	I'm not listed.	
Eric	Doak	D4EnergySolutions	I'm not listed.	I'm requesting membership
Goran	Milojevic	DV Power	I'm not listed.	
Manuel	Quinones	GE Vernova	I'm not listed.	
Martin	Munoz	Orto	I'm not listed.	
Miguel	Fernandez	Braintree Electric Light Dept.	I'm not listed.	
Mike	Nolte	Kiewit	I'm not listed.	I'm requesting membership
Nick	Post	WEC Energy Group	I'm not listed.	
Robert	Blake	Niagara power transformer.	I'm not listed.	
Taylor	Gray	Portland General Electric	I'm not listed.	
Tim	Dappen	Cargill	I'm not listed.	I'm requesting membership
Todd	Felton	MVA Diagnostics	I'm not listed.	
Troy	Tanaka	Burns & McDonnell	I'm not listed.	
Tyler	Mann	Guest	I'm not listed.	
Will	Elliott	AEP SWEPCO	I'm not listed.	
William	Boettger	Boettger Transformer	I'm not listed.	

		Consulting LLC		
Balakrishnan	Mani	Delta star field service	Guest	I'm requesting membership
Bernard	Labean	Consumers Energy Company	Guest	
Brad	Staley	Leeward Renewable Energy	Guest	I'm requesting membership
Braxton	Jones	SD Myers	Guest	
Bruce	Webb	Knoxville Utilities Board	Guest	
Charles	Sweetser	OMICRON	Guest	
David	Stelmach	Guest	Guest	
Diego	Robalino	Megger	Guest	
DOMINIC	POLLARO	Nass	Guest	I'm requesting membership
Donald	Lamontagne	Arizona Public Service	Guest	
Enrique	Betancourt	Prolec ge	Guest	I'm requesting membership
Fabricio	Dias	Ge Vernova	Guest	
Hector	Garza	Orto	Guest	
Henry	Pinto	Island Associates Inc	Guest	I'm requesting membership
James	Gardner	Prolec-Ge Waukesha	Guest	I'm requesting membership
Jayram	Yadava	Hitachi Energy	Guest	
Jinesh	Malde	Shell	Guest	
John	Phouminh	Novec	Guest	
John	Herron	Raytech	Guest	I'm requesting membership
Joshua	Garner	RESA Power	Guest	
Juan	Ortiz	Reinhausen Manufacturing	Guest	I'm requesting membership
Leon	White	Hedrich North America	Guest	
Lorne	Gara	Shermco	Guest	
Muhammad	Sohail	CES Transformers	Guest	I'm requesting membership

Abdullah				
Nick	Perjanik	AVO Diagnostic Services	Guest	
Olivier David	Uhlmann	Reinhausen Canada Inc.	Guest	
Philip	Miller	Memphis Light, Gas & Water	Guest	
Rahman Azis	Prasojo	Cal Poly SLO	Guest	
Roberto	Borges	Hitachi Energy	Guest	
Roberto	Da Silva	Maschinenfabrik Reinhausen	Guest	
Roger	Fenton	Fenton Solutions	Guest	I'm requesting membership
Ronald	Hernandez	Doble Engineering	Guest	
Samuel	Bourseul	Sales engineer	Guest	
Tiago	Bertran	Siemens Energy, Inc.	Guest	
Timothy	Raymond	Inductive Reasoning	Guest	I'm requesting membership
William	Herron	Reinhausen	Guest	I'm requesting membership
xingshuang	Du	Sieyuan	Guest	
Zack	Draper	Delta-X Research	Guest	
Zhenquan	yu	Sieyuan Toshiba Transformer	Guest	I'm requesting membership
Bruce	Forsyth	Cargill	Following	I'm requesting membership
Gilles	Bargone	FISO	Following	
Lance	Lewand	Doble Engineering	Following	
ROGERIO	VERDOLIN	Verdolin Solutions Inc	Following	I'm requesting membership
Tiffany	Lucas	Prolec GE Waukesha	Following	I'm requesting membership

WG Guide for Installation and Maintenance of Power TRF C57.93

Tuesday, October 21, 2025

3:15 – 4:30 PM

Hyatt Regency, Calusa DE

Bonnita Springs, FL

Chairman: Scott Reed

Vice Chairman: Alwyn VanderWalt

Secretary: Kyle Stechschulte

The meeting was called to order at 3:15 pm by Chair Scott Reed. This is the third meeting for this Working Group. The current guide expires 12/31/2029. The PAR for this WG expires 12/31/2028.

Chairman posted the Patent Claim and Copyright slides. No notifications or comments were received.

The Working Group has 52 current members and required 27 members be present to achieve a quorum. 77 guests and members were in attendance, 33 members and 44 guests achieving a quorum.

A motion was made by Andy Keels and seconded by Evgenii Ermakov to approve the agenda. It was unanimously approved by the working group.

A motion was made by Diego Moyolema and seconded by Weijun Li to approve the Spring 2025 meeting minutes. It was unanimously approved by the working group.

The chair recapped the status of the PAR status, the title and scope as approved for the PAR, and the work done during the previous meetings. The chair reiterated that the scope of the PAR was significantly changed compared to the previous document. Whereas the previous guide covered three voltage classes and MVA ratings, the new guide will be divided based whether the transformer is shipped with or without oil.

The 7 task force leaders presented progress to the group:

TF1 Shipping and Assembly—Ryan Musgrove

- Has not met yet, will schedule virtual meetings in the next few months.

TF2 Vacuum Processing Methods—Kyle Stechschulte

- Had several virtual meetings and are making progress.
- Discussion was held related to definitions, vacuum times, hold times and the tables in the current guide, which will be changed in the new guide.

TF3 Final Testing and Energization—Elizabeth Bray

- Several meetings were held and discussion related to cold start-up procedures is ongoing. Jinesh Malde volunteered to assist TF3 with analyzing what to do with C57.93a for Cold Start Up, as only one test was performed as part of the entity guide revision.

TF4 Relocation and Field Repair—Alwyn VanderWalt

- No meetings were held. Volunteers are needed to continue the work of the TF. The TF chair presented an outline of the topics that will be covered in this section. Several new volunteers stepped up.

TF5 Maintenance—Weijun Li

- Three more meetings were held since the WG meeting in Denver. Progress being made but the group will continue to update and make changes to the guide based on the new scope requirements.

TF6 Storage—Pat Rock

- Pat did not attend. No update was provided.

TF7 Editorial and Definitions—Jesse Duffey

- This TF will start work as soon as some of the other TF have drafts of their work available.

Old Business: None

New Business: None.

The chair encouraged the TF chairs to continue work on their sections and to present updates at the next meeting in Ft Worth. The TF chairs will meet in January to go over each area to ensure no overlaps or gaps as part of this guide revision.

The next WG meeting will be in Fort Worth, TX in March 2026.

The meeting was adjourned at 4:22 p.m.

First Name	Last Name	Affiliation	Member
Jason	Beaudoin	Weidmann	
Edwin	Betancourt	Siemens Energy	
Wallace	Binder	wbbinder consultant	Member
Ribert	Blake	Niagara power transformer	
JOSH	BOHRN	POWER ENGINEERS, INC.	
Roberto	Borges	Hitachi Energy	
Samuel	Bourseul	Northbrit / KOLEKTOR ETRA	
Elizabeth	Bray	Southern Company	
Stuart	Chambers	EPRI International	Member
sudip	chanda	Delta Star Inc	Member
Juan Carlos	Cruz Valdes	PROLEC GE	Member

Tim	Dappen	Cargill	Member
Fabricio	Dias	GE Vernova	
Eric	Doak	D4EnergySolutions	Member
Jeffrey	Door	H-J Family of Companies	
Jesse	Duffy	Nashville Electric Service	Member
Evgenii	Ermakov	Hitachi Energy	Member
Miguel	Fernandez	Braintree Electric	
Lorne	Gara	Shermco	Member
Eduardo	Garcia	Siemens Energy	
Hector	Garza	Orto de México	
Taylor	Gray	Portland General Electric	
Brad	Greaves	Weidmann Electrical Technology, Inc	
Brad	Grooms	NTS	Member
Roger	Hayes	GE Vernova	Member
David	Herrington	PTT/Warranty Manager	
William	Herron	Reinhausen	Member
Braxton	Jones	SD Myers	
Vinay Kumar	Karimilla	Toshiba International Corporation	
Thomas A.	Keels	kEElectric Engineering PLLC	Member
Yeoundoo	Kim	JST power equipment	Member
Fred	Kirchner	HICO America l	
Bernard	LaBean Jr	Consumers Energy Company	
Weijun	Li	Braintree Electric Light Department	Member
Mario	Locarno	Doble Engineering	Member
José Luis	Machain	Protec GE	Member
Jinesh	Malde	Shell	
Balakrishnan	Mani	Delta star field service	Member
Michael	Massolini	Siemens Energy	
Robert	Mayer	Trench Austria	
Alexander	Millan	Siemens Energy	
Goran	Milojevic	DV Power	
Diego	Moyolema	Ecuatran SA	
Martin	Munoz	Orto	
David	Murray	TVA	Member
Ryan	Musgrove	Oklahoma Gas & Electric	Member
Anthony	Natale	HICO America	Member
Juan	Ortiz	Reinhausen Manufacturing	
Rakesh	Patel	Hitachi energy	Member
Pedro	Pedro	Efacec Energia	Member
John	Phouminh	Novec	
Rahman Azis	Prasojo	Cal Poly SLO	
Nuno	Rato	Efacec	

Scott	Reed	MVA	Chair
Diego	Robalino	MEGGER	Member
David	Rohrer	FirstEnergy	
Mickel	Saad	Hitachi Energy	
Alaor	Scardazzi	Siemens Energy	Member
Ewald	Schweiger	Siemens Energy	Member
Pugazhenth	Selvaraj	Forgent Power	
Sanket	Shetty	Oncor Electric Delivery	
Ibrahim	Shteyh	Consultant	
Jonathan	Sinclair	Black and Veatch	
David	Stockton	SBC	Member
Charles	Sweetser	Omicron	
Janusz	Szczechowski	Maschinenfabrik Reinhausen GmbH	
Jonathan	Tan	Northern Transformer	Member
Troy	Tanaka	Burns & McDonnell	Member
Reinaldo	Valentin	Duke Energy	
Joel	Valley	Fayetteville PWC	
Alwyn	Vanderwalt	ECI	Vice Chair
Luz	Villanueva	Siemens Energy	
Alan	Washburn	Burns and McDonnell	Member
Matthew	Webb	GE VERNOVA	
Peter	Werelius	Megger	
Eva	Zarco	Yash	
Kris	Zibert	Allgeier Martin	Member

Unapproved Meeting Minutes

PC57.153 WG Guide for Paralleling Regulating Transformers

Minutes from October 21, 2025 – Bonita Springs Meeting

Officers

Chair – Mark Tostrud

Vice Chair – Cihangir Sen

Secretary – Zan Kiparizoski

1. Call to Order

The meeting was called to order at 4:45 PM on October 21, 2025

2. Chairs Remarks

Meeting started with the officers' introduction and attendance. A QR code was used to register the attendance in addition to the paper rosters.

2.1 Essential Patent Claims

IEEE SA slides related to the Essential Patent Claims were reviewed. The Chair provided an opportunity to identify any patent related claim. No claims were made.

2.2 Copyright Policy

IEEE slides related to Copyright Policy were reviewed. No copyright issues were raised.

2.3 Participant Behavior

IEEE slides related to participant behavior in the individual working group/task force process were reviewed. There were no comments.

3. Attendance

- There were 38 attendees in the meeting
 - 14 members were present
 - 4 guests requested membership
- Quorum check
 - Quorum was achieved, 14 of 22 members were present

4. Approval of the agenda and minutes from the last task force meeting

4.1. Meeting Agenda

- Welcome and call to order
- QR Code Attendance Registration and Distribution of attendance rosters
- Call for Essential Patents
- Review of IEEE-SA Copyright policy
- Review of Code of Conduct Policy
- Introductions
- Review and approval of the revised meeting agenda
- Review and approval of the revised minutes from the Spring 2025 meeting
- Review and approve changes in draft D4
 - Example 4.4.1 – Common source bus application
 - Annex C
- Discuss status of the section on recommended actions during reverse power flow
- Recommend changes to the guide for the Use of Inclusive Language in Technical Terminology and Communications.
 - IEEE 3400 was approved June 20
- Old Business
- New Business
- Next steps
- Next Meeting(s)
 - Virtual - TBD
 - In Person – March 24, 2026 – Fort Worth , TX
- Adjourn

4.2 Approval of the revised minutes from the last working group meeting in Spring 2025 and the revised agenda

Motion to approve the revised agenda .

- Motion by Dan Sauer
- Seconded by Weijun Li
- Unanimous approval

Motion to approve the revised minutes from Spring 2025 meeting .

- Motion by Dan Sauer
- Seconded by Jiahao Xie
- Unanimous approval

5. Review and approve changes in draft D4.

5.1 Example 4.4.1 – Common source bus application

The discussion moved to the proposed changes in Section 4.4.1 and the modified example in the existing proposal. Dan Sauer commented that a clarification should be added, noting that in this case the transformers are assumed to have the same power rating, with different impedances calculated at the same base power. The discussion was opened, and several ideas were presented to further clarify the language. It concluded with an agreement to add additional explanations to the example in Item 4.4.1 and send it to the working group for review.

5.2 Annex C

Annex C details were presented to the group. This annex includes more detailed calculations and examples covering multiple paralleling scenarios. The original text has been modified, and additional changes were introduced. The group agreed to allow more time to review these revisions before final acceptance.

5.3 Discuss status of the section on recommended actions during reverse power flow

The meeting focused on coordinating efforts between working groups to address the changes required in Section 1.1.3, *Distributed Substations with Generation*, to incorporate the recommended actions related to reverse power flow. Eric Elson noted overlap between C57.133 and C57.153, emphasizing the need to avoid duplication. He observed that the current draft of C57.133 lacks sufficient coverage of reverse power flow and plans to continue developing that section through December. Dan Sauer volunteered to continue working on the reverse power flow section in Section 1.1.3. Eric and Dan will coordinate to keep both groups aligned, with work on the draft expected to continue through spring 2026.

5.4 Recommend changes to the guide for the Use of Inclusive Language in Technical Terminology and Communications.

The group discussed the IEEE policy on inclusive language, which was approved in June. It was confirmed that the guide does not use 'master-slave' terminology, only 'master-follower.'

One of IEEE's suggestions was to change the terminology to 'leader-follower,' but the group reached a consensus to keep the current wording 'master/follower,' and in some cases throughout the document, 'master control/follower control,' as it aligns with previous decisions and existing industry use.

Saramma Hoffman volunteered to review the document to ensure consistent terminology, and the decision will be documented for reference. The group agreed to proceed with a straw ballot once the current updates are completed, likely by January 2026.

6. Old Business

No old business was identified.

7. New Business

No new business was identified.

8. New steps

A discussion on the next steps for the straw ballot process was opened. Francis Mills and Dan Sauer volunteered to assist with reviewing and handling comments once the straw ballot is issued, likely in January. There were no objections to allowing the ballot resolution group to make necessary revisions based on previous discussions and feedback.

9. Next Meeting

The next scheduled meeting will be held at the standard meeting time in Spring 2026 in Fort Worth, TX

10.The meeting adjourned at 5:30 PM

11.Minutes

The minutes were recorded by Zan Kiparizoski – secretary and reviewed by
Mark Tostrud – Chair and John Sen Vice-chair

C57.153 – Guide for Paralleling Regulating Transformers			
Last Name	First Name	Affiliation	Role
Bargone	Gilles	FISO	Member
Carrizales	Juan Alfredo	Prolec GE	Guest
Colopy	Craig	EATON	Guest
Crockett	Dan	Ameren	Guest
Dillon	Nikolaus	Dominion Energy	Guest
Dolloff	Paul	EKPC	Guest
Elson	Eric	San Diego Gas and Electric	Guest
Fernandez	Miguel	Braintree Electric Light Dept.	Guest
Gara	Lorne	Shermco	Guest
Heiden	Kyle	Eaton	Member
Herrington	David	PTTI/Warranty Manager	Guest
Hoffman	Saramma	PPL	Member
Jeong	chanmin	HD hyundai	Guest
Kim	Dohyung	HD Hyundai electric	Guest
Kiparizoski	Zan	Howard Industries	Secretary
Labh	Ashwini	Hitachi Energy	Guest
Li	Weijun	Braintree Electric Light Department	Member
Machain	Luis	Prolec GE	Guest
Magela	Geraldo	Siemens-Energy	Guest
Mills	Francis	POWER Engineers	Member
Moyolema	Diego	Ecuatran SA	Guest
Musgrove	Ryan	Oklahoma Gas & Electric	Member
Radu	Ion	Hitachi Energy	Member
Rossini	Yuri	Siemens Energy	Member
Sanchez	David	NextEra Energy	Guest
Sauer	Daniel	Eaton	Member
Schleismann	Eric	Southern Company	Member
Shannon	Mike	Rea Magnet Wire	Guest
shertukde	Hemchandra	Diagnostic Devices Inc.	Member
Singh	Manpreet	Constellation Energy	Guest
Stank	Markus	MR Germany	Member
Szczechowski	Janusz	Maschinenfabrik Reinhausen GmbH	Guest
Tostrud	Mark	Dynamic Ratings	Chair
Uhlmann	Olivier David	Reinhausen Canada Inc.	Guest
Van Der Walt	Alwyn	ECI	Guest

Watson	Joshua	NPPD	Guest
Whitten	Christopher	Reinhausen	Guest
Xie	Jiahao	S&C electric	Guest

IEEE C57.148 PAR Study Group, Virtual Meeting

Chair: Weijun Li, Braintree Electric Light Department

Vice Chair: Trent Williams, Advanced Power Technologies

Secretary: Francis Mills, POWER Engineers

Minutes of Meeting

- Meeting (re)called to order at 11:05am EDT, Thursday, July 24th, 2025
- Chair's remarks
- Introductions were made.
- No objections noted to approval of the circulated agenda
- Attendance:
 - 16 Persons.

Role	First Name	Last Name	Company	Present, Virtual
	Jeremiah	Bradshaw	Bureau of Reclamation	Y
	Wallace	Binder	WBBinder Consultant	Y
	Hakim	Dulac	Advanced Power Technologies	
	Miguel	Fernandez	Braintree Electric Light Dept.	Y
	Amr	Ghanem	Eversource Energy	Y
	Rob	Ghosh	GE Vernova	Y
	Thomas	Keels	kEElectric Engineering PLLC	
	Zan	Kiparizoski	Howard Industries	
	Dmitriy	Klempner	Southern California Edison	Y
Chair	Weijun	Li	Braintree Electric Light Dept.	Y
	Darrell	Mangubat	Siemens Energy	
Secretary	Francis	Mills	POWER Engineers, Inc.	Y
	Ritesh	Mistry	Hitachi Energy	Y
	Ryan	Musgrove	Oklahoma Gas & Electric	Y
	Shankar	Nambi	Bechtel	Y
	Patrick	Rock	American Transmission Co.	Y
	Yuri	Rossini	Siemens Energy	Y
	Brad	Staley	Leeward Renewable Energy, LLC	
	Dominique	Violette	Nomos Systems	Y
	Joe	Watson	JD Watson and Associates Inc.	
Vice Chair	Trenton	Williams	Advanced Power Technologies	Y
	Kris	Zibert	Allgeier, Martin and Associates	Y

- Patent Claims slides were reviewed. No claims were noted by the attendees.
- Copyright Policy slides were reviewed. No questions or concerns were noted by the attendees.
- IEEE-SA Participant behavior Policy slides were reviewed. No questions or concerns were noted by the attendees
- Reviewed Project Timeline: If all goes to plan, the document could be reissued in 2029
- Key Technical Discussions
 - Chair asked group for an open discussion on whether the document is being referenced and used. Multiple users confirmed use.
 - Shankar Nambi presented a few additional comments to improve the document. These comments were from the previous revision cycle. Were tabled until next revision cycle: 6.7, Potential New Section, 7.6.1.
- MOTION: ...to give us a chance to work on the document
 - Moved by Jeremiah Bradshaw
 - Seconded by Saurabh Ghosh
 - No objection to unanimous approval, motion passed
- MOTION:...to keep the title unchanged
 - Moved by Wallace Binder,
 - Seconded by Saurabh Ghosh
 - Discussion made that “IEEE” prefix could be removed, due to the structure of the latest template. Group sentiment was that this removal would be acceptable as a late-stage editorial edit.
 - No objection to unanimous approval, motion passed
- Open discussion was entertained regarding updates to the scope.
- MOTION:...to accept the scope, as shown on the screen
 - *This standard provides minimum and optional function, layout, component, construction, and documentation requirements for control cabinet designs. This standard applies to Class I and Class II power transformers and does not apply to distribution or padmount design transformers.*
 - Moved by Jeremiah Bradshaw
 - Seconded by Wallace Binder
 - No objection to unanimous approval, motion passed
- Open discussion was entertained regarding updates to the Purpose.
- MOTION:...to accept the purpose, as shown on the screen

- *This document provides users and manufactures with a set of standard requirements that can be specified. The document should reduce the engineering time required by manufacturers to create and by users to review control cabinet designs.*
- Moved by Wallace Binder
- Seconded by Dominique Violette
- No objection to unanimous approval, motion passed
- MOTION:.. Given that the group has decided that the document is needed, the group has accepted the title as is, and the group has accepted the scope and purpose as revised, it is so moved that this group will request the Power Transformer Subcommittee to approve this group and to apply for a PAR.
 - Moved by Saurabh Ghosh
 - Seconded by Dominique Violette
 - No objection to unanimous approval, motion passed
- Next Meetings: will not meet in Fall 2025. First Meeting likely in Spring 2026, once we receive a PAR.
- Adjourned at approximately 12:20pm EDT

Minutes prepared by Francis Mills