

Annex D Dry Type Transformers Subcommittee

Wednesday October 22, 2025

IEEE Transformer DTSC Spring 2025 Bonita Springs, FL

Chair: David Walker

Vice-Chair: Aniruddha Narawane

Secretary: Dave Stankes

D.1 Introductions, Chairs Remarks

The Dry-type Transformers Subcommittee (DTSC) met in the Calusa ABC room at the Hyatt Regency Coconut Point Resort on October 22, 2025 at 1:30 PM (EST).

The Chair notified the attendees that the meeting would be recorded for the purpose of accurately documenting the minutes, and that recording would be erased once minutes were completed.

Welcomed two new members to the DTSC, Erik Tarango and Val Tatu.

Chair requested TF and WG chairs to provide a short one sentence summary of what was accomplished this week to be shared at Closing Session. Meeting minutes requested to be forwarded to Dave Stankes asap.

Chair presented IEEE copyright policy and patent slides and reviewed the information on how to address and comply with these items.

D.2 Attendance and Quorum

The chair presented a slide with the names of all current members. There were 41 attendees. 19 of the 34 members of the DTSC listed on the slide were present, so a quorum was reached. Eleven attendees requested membership, three of which met criteria for approval. (Nam Tram, William Sean O'Keefe, and Paul Weyandt). There were also two DTSC members that were not listed on the DTSC membership slide that was presented. Renjie Fu and David Caverly

Attendance was recorded via QR code attendance log.

D.3 Approval of Agenda and Minutes

The chair entertained a motion to approve the planned agenda that was displayed at the meeting. A minor adjustment to the agenda was requested, adding Shawn Nunn as the Chair as C57.12.55

Motion to Approve – Mike Iman

Seconded – Tim-Felix Mai

Agenda was approved unanimously.

The Fall 2024 DTS meeting minutes were posted on the Transformer Committee website. These were not approved at this meeting and will need to be approved at Spring 2026 meeting.

D.4 Working Group/Task Force Reports

Presentation of the reports of the various working groups and task forces. See the following sections for the individual reports:

D.4.1 C57.12.58 Transient Voltage

Ken Klein

The Working Group met in Great Egret Meeting room. The meeting was called to order at 8:00 AM by Chair Ken Klein.

Chair made opening comments.

WG Roster has been distributed via online system.

Attendance:

- 41 total participants
- 13 Members
- 28 guests
- 9 guests requested membership

There were 13 out of 14 members present. A quorum was present.

WG Meeting Agenda

1. **Welcome & chair's remarks**
 2. **Introduction of attendees, Check for members/attendance**
 3. **Approval of agenda & Spring Working group minutes**
 4. **Call for essential Patents & IEEE SA Policies review**
 5. **Continue review of document**
 - **Stopped at top of page 11 in Section 5.2.2**
 - **Simulation**
 6. **Meeting Adjournment**
-

The Chair asked for a motion to approve the agenda. Colby moved to accept the agenda, with Bob seconding the motion. There was no discussion, and approval of the agenda was unanimous.

The Chair had distributed the minutes of the last meeting. He asked for a motion to approve the minutes. David moved to accept the minutes, and Casey seconded the motion. There was no discussion, and approval of both sets of minutes was unanimous.

The chair presented the information on Patent Disclosures and IEEE SA Copyright Policy. He asked the group to report any relevant patent issues – None were communicated.

Klaus volunteered to present how simulation software is used for simulating transients in air core reactors at the next meeting.

The group agreed to include simulation along with a non-inclusion list in the main body of the document.

Motion: To incorporate simulation within the main body of the document, accompanied by a non-inclusive list of freely available tools. All simulations should be validated prior to implementation.

By: Casey

Second: David

14 in favor, motion passed

Micro-cap 12 from Spectrum Software was mentioned as an public available tool that can be used for simulation

Continue the read through the document starting on line 473

Line 474

Old: For the purpose of determining the minimum... Figure 5, will be considered, and all... characteristics are neglected.

New: ~~For the purpose of determining~~ **To determine** the minimum... Figure 5, ~~will be considered~~ **can be used**, and ~~All...~~ **All...** characteristics ~~are~~ **would be** neglected.

Line 497

Old: should work for the vast majority of applications.

New: should work for the vast majority of **most** applications.

Line 498

Old: Commercial surge generators have the ability to select inductors ranging from

New: Commercial surge generators ~~have the ability to select~~ typically have selectable inductors ranging from..

Line 500

Old: For special situations, terminals may be brought

New: ~~For special situations,~~ If needed terminals may be brought

Casey raised the question do we need the instruction how to build recurrent surge voltage generator in the main body of the document or if it can be moved to an Annex as recurrent surge voltage generators are commercially available.

Motion to move Section 5 to an Annex by Joe

Second: David

Motion was unanimous approved

The meeting was adjourned, without objection, at 9:08 PM.

The working group will meet during the Spring Transformers Committee Meeting in March 2026 in Fort Worth, Texas.

Chair: Ken Klein

Vice-Chair: Chris Powell

Secretary: Tim-Felix Mai

Meeting Participation List:

| First Name | Last Name | Affiliation | Member status |
|-------------|-----------|---------------------------|--------------------|
| Kenneth | Klein | Johnson | Member |
| Chris | Powell | Intermountain Electronics | Member |
| Bob | Fyrer | EIS | Member |
| Benjamin | Guinand | Power Magnetics | Guest |
| Colby | Lovins | Federal Pacific | Member |
| Tim-Felix | Mai | Siemens Energy | Member |
| Grace Guang | Yuan | Hitachi Energy | Member |
| Jim | McBride | JMX | Guest |
| David | Caverly | Trench Limited | Request Membership |
| Moonhee | Lee | Hammond Power Solutions | Member |
| Malia | Zaman | IEEE SA | Guest |
| Klaus | Pointner | Trench Austria GmbH | Guest |
| Mohsen | Mostafaei | Eaton Corporation | Request Membership |
| Joseph | Tedesco | Hitachi Energy | Member |
| Jason | Lambert | JST Power Equipment | Guest |
| David | Murray | ENERCON | Guest |
| Curtis | Frye | 3M | Guest |
| Agustín | Ortega | Siemens Energy | Guest |
| Shawn | Nunn | Hitachi Energy | Request Membership |
| David | Stankes | 3M | Guest |
| Nam Tran | Nguyen | TT Electronics | Request Membership |

| | | | |
|-------------|-----------|-----------------------|--------------------|
| Sam | Attaguile | 3M Company | Request Membership |
| Val | Tatu | Powersmiths | Member |
| Casey | Ballard | DuPont Nomex | Member |
| Evanne | Wang | DuPont | Guest |
| Sean | O'Keefe | DuPont | Member |
| Saif | Hossain | Trench Limited | Guest |
| Dipeshkumar | Patel | Hyper Solutions | Member |
| Aniruddha | Narawane | Voltaris | Guest |
| Mike | Sharp | Trench Limited | Guest |
| David | Walker | MGM Transformer | Member |
| Mike | Iman | MGM Transformers | |
| Renjie | Fu | ERMCO | Guest |
| Jason | Beaudoin | Weidmann | Guest |
| Paul | Weyandt | Schneider electric | Request Membership |
| Erik | Tarango | Olsun electric | Guest |
| Jesus | Nunez | MGM TRANSFORMER | Request Membership |
| Aleksandr | Levin | Weidmann | Guest |
| David | Ramos | MGM Transformers | Guest |
| Seetaram | Alwala | Kiewit | Guest |
| Marco | Espindola | Hitachi Energy | Request Membership |
| Mike | Iman | MGM Transformers | Request Membership |
| Grace guang | Yuan | Hitachi energy | Member |
| Luis Felipe | Mendez | JST Power Equipment | Guest |
| Chuck | Cumella | NWL Transformers | Guest |
| Abdalla | Elnor | Enercon Services Inc, | Request Membership |
| Tyler | Falvey | JST Power Equipment | Guest |
| David | Sanchez | NextEra Energy | Guest |
| Orlando | Urbinez | JST POWER EQUIPMENT | Guest |

D.4.2 Revision for IEEE Revision of C57.12.01 Chair Casey Ballard

C57.12.01 WG did not meet in Bonita Springs as this document is now in ballot. Chair of the WG reminded members to vote on this ballot.

D.4.3 Revision for IEEE 259 Chair Dave Stankes

Chair: David Stankes

Vice-Chair: Joseph Tedesco

Secretary: Tim-Felix Mai

WG Meeting Agenda

1. Introductions / Attendance/Determine Quorum

2. Approval of agenda
3. Code of Conduct, Copyright, Essential Patent review
4. Approval IEEE 259 WG Meeting Spring 2025 (Denver)
5. PAR Extension Update
6. TF summer progress and recommendations
Draft 6 review
7. Meeting Adjournment

The IEEE 259 Working Group convened in the Captiva meeting room, with Dave Stankes calling the session to order at 3:15 PM.

| Attendance | Members | Guests | Working Group Members | Quorum Established | Guests requesting Membership |
|----------------|---------|--------|-----------------------|--------------------|------------------------------|
| 37 individuals | 13 | 24 | 13 out of 22 | Yes | 11 |

Dave S. requested a motion for agenda approval; Aniruddha moved to accept the agenda and Rob provided the second. The motion carried unanimously without discussion.

Copies of the previous meeting's minutes were distributed by Dave S., who subsequently solicited approval thereof. Rob moved to approve the minutes, Colby seconded, and no discussion ensued. Both sets of minutes were unanimously approved.

Dave S. reviewed the IEEE working group meeting guidelines, including patent and copyright information slides. He inquired about any related concerns from attendees, and none were raised or noted.

Old Business:

1. PAR Extension Update:

- Current PAR will end 12/31/26
- Recommend requesting extension, but need to wait until next year (2026) to do so.
- PAR revision will be needed due to change in Title and Scope.

Important for Members to attend Spring meeting as we will need to vote on these items.

2. IEEE 259 TF Summer Activity

Eight virtual meetings took place between May and September, with attendance varying among TF members.

Dr. Nancy Frost

Solomon Chiang

| | |
|------------------|----------------|
| Ashley M. Reagan | Corina Wenzara |
| Evanne Wang | Chris Powell |
| Bob Fyrer | Joe Tedesco |
| Roger Wicks | Casey Ballard |
| Tim-Felix Mai | Mark Raymond |
| Edward VanVooren | David Walker |
| Val Tatu | |

3. Outstanding items

- Introduction
- Normative references (Clause 2)
- Definitions, acronyms , and abbreviations (Clause3)
- Data analysis
- Annex organization

4. Draft 6 review

David shared the proposed changes:

Project Title: Standard Test Procedure for Evaluation of Systems of Insulation for Dry-Type Specialty and General-Purpose Transformers

(Proposed) Scope: This test procedure is for the thermal evaluation of Electrical Insulation Systems for dry-type transformers with a voltages below 601 V.

(Proposed) Purpose: The standard describes a way to assign a thermal class to a new electrical insulation system by comparison to a known EIS or by assignment of a thermal class based on assigned correlation time. The standard will also describe the procedure for modification of an established electrical insulation system.

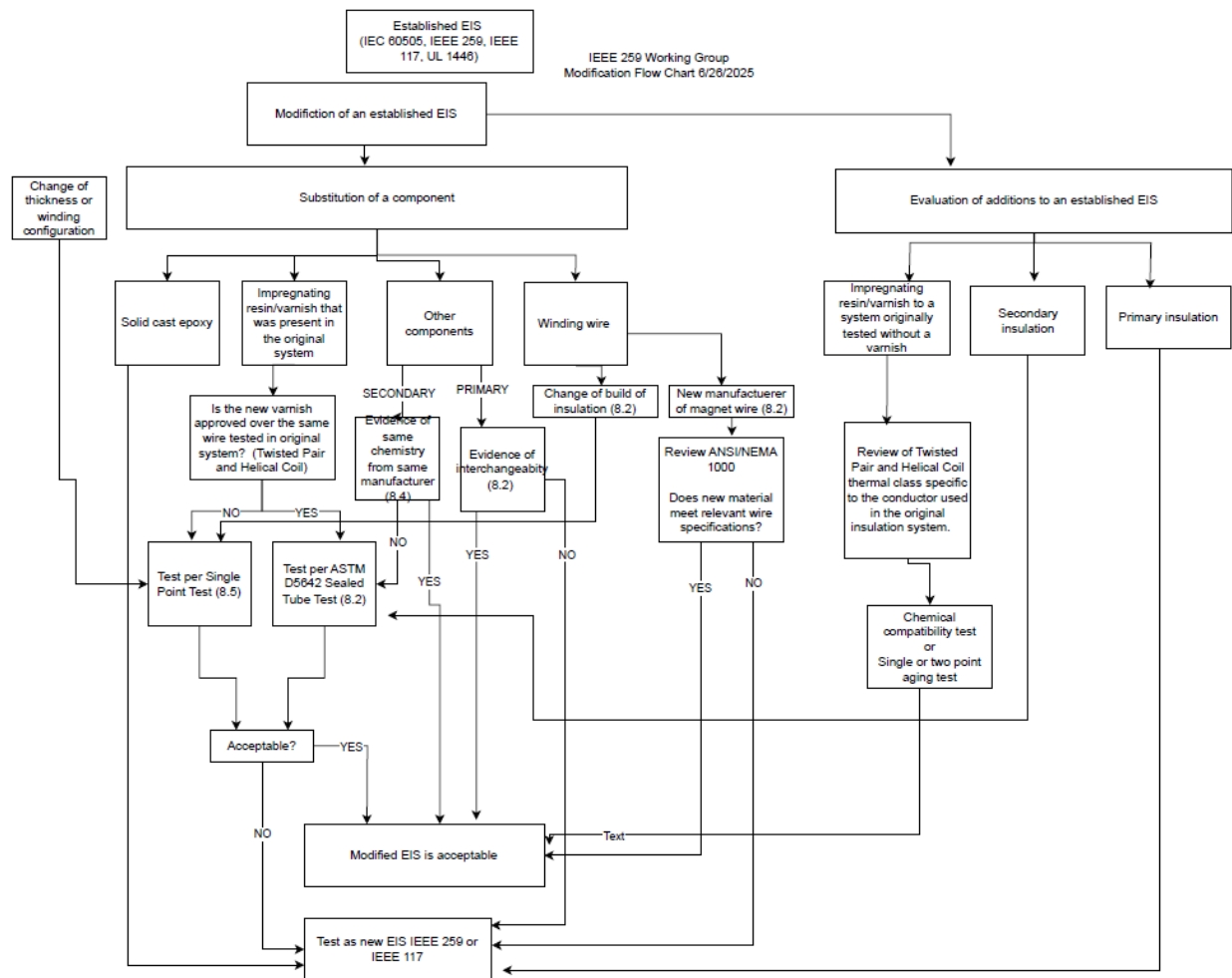
David S. showed the latest version (Draft 6) to the group and highlighted the key changes.

Evanne showed the flow chart for updating an insulation system.

Due to development and innovation in materials, design, and manufacturing processes, it is common to make changes to an insulation system after the full thermal aging has been completed. Due to development and innovation in materials, design, and manufacturing processes, it is common to make changes to an insulation system after the full thermal aging has been completed. Therefore, it is necessary to have procedures defined to allow for users to modify the insulation system. New types of primary and secondary insulations not already present in the system may be added, and varnishes may be added to systems that were originally tested without a varnish. Substitutions of material components involve adding primary or secondary insulations that are similar to ones already present in the system, changes to the solid cast epoxy or impregnating varnish, and alterations to the type or supplier of wire used for winding. Changes in the winding configuration, such as from a layer winding to a disk winding, may be considered. The procedures for each of these

| | | | |
|--------|---------|----------------|--------------------|
| David | Caverly | Trench Limited | Request Membership |
| Renjie | Fu | ERMCO | Request Membership |

modifications are outlined in the flow chart



Several virtual interim meetings will take place before the Spring 2026 meeting; dates are still to be determined. The working group will also meet during the Spring Transformers Committee Meeting in March 2026 in Fort Worth, Texas.

Dave Stankes requested to the Chair of the DTSC that the TF formed to address specific outstanding clauses continue to meet and work through the winter. Approved. (at the DTSC meeting)

The meeting was adjourned at 4:10 PM.

Attendance:

| First Name | Last Name | Affiliation | Member status |
|------------|-----------|----------------|---------------|
| Tim-Felix | Mai | Siemens Energy | Secretary |
| David | Stankes | 3M | Chair |
| Kenneth | Klein | Johnson | Guest |

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| | | | |
|-------------|------------|-----------------------------|--------------------|
| Rob | Ghosh | GE Vernova | Member |
| Zhenquan | yu | Sieyuan Toshiba Transformer | Guest |
| Sam | Attaguile | 3M Company | Guest |
| Klaus | Pointner | Trench Austria GmbH | Request Membership |
| Evanne | Wang | DuPont | Member |
| Chris | Powell | Intermountain Electronics | Member |
| Brian | Sonnenberg | Iti | Guest |
| Ken | McKinney | UL Solutions | Guest |
| Benjamin | Guinand | Power Magnetics | Guest |
| Moonhee | Lee | Hammond Power Solutions | Member |
| Joseph | Tedesco | Hitachi Energy | Vice Chair |
| Caroline | Peterson | Xcel Energy | Guest |
| Saif | Hossain | Trench Limited | Guest |
| Colby | Lovins | Federal Pacific | Member |
| Ryan | Alkire | GE Vernova | Guest |
| Sean | O'Keefe | DuPont | Member |
| Aniruddha | Narawane | Voltaris | Member |
| Casey | Ballard | DuPont Nomex | Member |
| Val | Tatu | Powersmiths | Request Membership |
| Mohsen | Mostafaei | Eaton Corporation | Request Membership |
| Aleksandr | Levin | Weidmann | Member |
| Bob | Fyrer | EIS | Member |
| Marilia | Ribeiro | GE Vernova | Request Membership |
| Mike | Sharp | Trench Limited | Guest |
| Curtis | Frye | 3M | Guest |
| Grace Guang | Yuan | Hitachi Energy | Request Membership |
| Erik | Tarango | Olsun electric | Request Membership |
| Jesus | Nunez | MGM Transformer | Request Membership |
| Ramos | David | MGM Transformers | Guest |
| Marco | Espindola | Hitachi Energy | Request Membership |
| Nam Tran | Nguyen | TT Electronics | Request Membership |
| Agustin | Ortega | Siemens Energy | Guest |
| David | Caverly | Trench Limited | Request Membership |
| Renjie | Fu | ERMCO | Request Membership |

D.4.4 ANSI C57.12.55 Enclosures**Shawn Nunn**

Chair: Shawn Nunn

Vice Chair: Rob Ghosh

Secretary: Colby Lovins

This was the second meeting of the IEEE C57.12.55 Working Group. The meeting was held in the Great Egret (1) meeting room, and Shawn Nunn called the meeting to order at 4:46 PM.

To save time, introductions were skipped.

There were 34 people present at the meeting, with 12 members and 22 guests. 5 guests requested membership. However, since this is only the second working group meeting, the requirements for WG membership have not been met. The Working Group had 12 out of 14 members; therefore, a quorum was reached, and business could proceed.

Shawn N. reviewed the agenda and asked for a motion to approve. Tim-Felix M. moved to accept the agenda, with Ken K. seconding the motion. There was no discussion, and approval of the agenda was unanimous.

Shawn N. reviewed the meeting minutes from the Spring 2025 meeting and asked for a motion to approve. Dave S. moved to accept the minutes, and Bob F. seconded the motion. There was no discussion, and approval of the minutes was unanimous.

Shawn N. showed the patent and copyright slides. He asked if there were any patent or copyright concerns from those in attendance; no one had any concerns or noted any patent/copyright issues

Old Business:

- Shawn N. reviewed the Old Business action items from the Spring 2025 meeting.
 - Discussed adoption of the same enclosure types as NEMA and UL.
 - Voted last meeting to remove Annex A, Annex B, Table 5 and Table 9 as these items are covered in other standards.
 - Discussed icing and blown snow protection. Chair to follow up with Manish S. since Hammond has developed a whitepaper on this topic.
 - Shawn N. asked if there was any discussion on these topics. No comment from the group.

New Business:

- Shawn N. displayed the current C57.12.55 enclosure types (table 7), the NEMA enclosure ratings and a conversion table of NEMA enclosure type ratings to IEC 60529. Illustrating the similarities and differences.
- Shawn N. also displayed / discussed the Enclosure Security Tests and Enclosure Categories currently included in the document.
- Discussion / questions from the group centering around harmonizing with other standards like UL, NEMA and CSA. Action Item: Chair to review related standards / documents for potential harmonization.
- Shawn N. asked the group for input on the best direction on updating the standard. Casey B. suggested coordinating with Patrycja J. for input on which groups (UL, NEMA, IES,

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CSA) IEEE have agreements concerning harmonization. Once determined, Shawn N. will create and submit a spreadsheet to the group with enclosure tests and ask for volunteers to review.

- Shawn N. to schedule a virtual meeting in January 2026 to review progress prior to the Spring 2026 in person meeting.
- Shawn N. asked for a motion to adjourn. Motion by Rob G., Seconded by Tim-Felix M. No discussion, and the approval to adjourn was unanimous.
- Meeting was adjourned at 5:28PM

At the DTSC a question was raised regarding wind blown rain/snow requirement resulting in a short technical discussion.

ATTENDANCE

| Role | First Name | Last Name | Affiliation |
|------------|-----------------|-----------|---------------------|
| Guest | Ryan | Alkire | GE Vernova |
| Guest | Sam | Attaguile | 3M |
| Member | Robert | Ballard | DuPont |
| Guest | Abdalla | Elnor | Enercon |
| Guest | Curtis | Frye | 3M |
| Guest | Renjie | Fu | Ermco |
| Member | Bob | Fyrer | EIS |
| Vice Chair | Rob | Ghosh | GE |
| Guest | Benjamin | Guinand | Power Magnetix |
| Guest | Rebecca | Kim | Cheryong Electric |
| Guest | Wooyun | Kim | Cheryong Electric |
| Member | Ken | Klein | Johnson |
| Guest | Jason | Lambert | JST Power Equipment |
| Secretary | Colby | Lovins | Federal Pacific |
| Guest | Alejandro | Macias | CenterPoint Energy |
| Member | Tim-Felix | Mai | Siemens Energy |
| Guest | Mohsen | Mostafaei | Eaton |
| Guest | Aniruddha | Narawane | Voltaris |
| Member | Nam Tran | Nguyen | TT Electronics |
| Guest | Jesus | Nunez | MGM Transformers |
| Chair | Shawn | Nunn | Hitachi Energy |
| Guest | William Sean | O'Keefe | Dupont |
| Guest | Agustin | Ortega | Siemens Energy |
| Guest | Caroline | Peterson | Xcel Energy |

| | | | |
|--------|--------|---------|---------------------------|
| Member | Chris | Powell | Intermountain Electronics |
| Guest | David | Ramos | MGM Transformers |
| Guest | David | Stankes | 3M |
| Guest | Kerwin | Stretch | Siemens Energy |
| Member | Eric | Tarongo | OLSUN Electric |
| Member | Val | Tatu | Powersmiths |
| Member | Joseph | Tedesco | Hitachi Energy |
| Guest | Evanne | Wang | DuPont |
| Guest | Bruce | Webb | KUB |
| Guest | Leon | White | Hedrich North America |

D.4.5 Revision of IEEE C57.94**Chair Ken Klein**

This WG did not meet in Bonita Springs as document is currently in REVCOM review. At the meeting Patrycja Jarosz reported that the document had completed REVCOM review and that no questions were raised.

D.4.6 Revision of C57.12.59 Through Fault Current**Paul Weyandt**

The Working Group met in Blue Heron Meeting room. The meeting was called to order at 11:00 AM by Chair Paul Weyandt.

- Chair made opening comments.
- WG Roster has been distributed via online system.
- Attendance:
 - 33 total participants
 - 19 Members
 - 7 guests
 - 7 guests requested membership
- There were 19 out of 33 members present. A quorum was present.
- WG Meeting
 - 1. Welcome and Introductions
- Roll call and attendee sign-in
- IEEE patent policy reminder
- 2. Review and Approval of Spring 2025 Meeting Minutes
- Confirmation of a quorum
- Review previous meetings minutes
- Entertaining a motion to approve the minutes
- 3. Status of the Guide
- Summary of current draft status (sent out to the working group in September)
- Overview of changes since last meeting
- 4. Action Item Updates
- David Walker – Comparison with liquid-immersed transformer guide
- 5. Discussion of Proposed Changes
- Review any new comments or proposals
- Solicit feedback from WG members

- 6. Next Steps
- Determine if another virtual meeting is needed before Spring 2026
- Timeline for next draft and balloting
- 7. New Business
- Open floor for additional topics
- 8. Adjournment

- Aniruddha moved to approve the agenda; Ken seconded. Motion passed unanimously
- Chair presented call for patents. No claims presented.

The Chair distributed the minutes from the previous meeting and requested a motion for their approval. Due to the absence of a quorum at the last session, it was also necessary to approve the minutes from Fall 2024. Colby moved to approve both sets of minutes, with Ken providing a second. No discussion ensued, and both sets of minutes were unanimously approved.

- The chair presented the information on Patent Disclosures, behavior policies and IEEE SA Copyright Policy. He asked the group to report any relevant patent issues – None were communicated.

- Current PAR expires on 12/31/2026

- The chair showed the latest changes to the draft

The chair then opened the floor for any additional business or announcements from the members. No further items were raised.

A motion was made by David, seconded by Aniruddha, to proceed to SA ballot with draft 2 of C57.12.59 and to establish a comment resolution group to address any comments received, without requiring review by the working group. The motion passed unanimously, with no discussion.

- Volunteers for the CRG:
- David, Paul Joe, Nam, Val, Tim-Felix

- The working group will not meet during the Spring Transformers Committee Meeting in March 2026 in Fort Worth, Texas.

- Meeting adjourned at 11:30 am.

- Chair: Paul Weyandt
- Vice Chair: David Walker
- Secretary: Tim-Felix Mai

At the DTSC following the WG report, Paul Weyandt made a motion requesting approval to take C57.12.59 Draft 2 to ballot. Motion was seconded by Casey Ballard. Motion was unanimously approved.

- Meeting Attendees:

| First Name | Last Name | Affiliation | Member status |
|-------------|-----------|---------------------------|--------------------|
| Tim-Felix | Mai | Siemens Energy | Member |
| Seetaram | Alwala | Kiewit | Guest |
| Nam Tran | Nguyen | TT Electronics | Member |
| Malia | Zaman | IEEE SA | Guest |
| Evanne | Wang | DuPont | Member |
| Val | Tatu | Powersmiths | Member |
| Chris | Powell | Intermountain Electronics | Member |
| Colby | Lovins | Federal Pacific | Member |
| Shawn | Nunn | Hitachi Energy | Request Membership |
| Ryan | Hogg | Bureau of Reclamation | Member |
| Bob | Fyrer | EIS | Member |
| Jason | Lambert | JST Power Equipment | Member |
| David | Ramos | MGM Transformers | Guest |
| Casey | Ballard | DuPont Nomex | Member |
| Kenneth | Klein | Johnson | Member |
| Chris | Wright | Spearmint energy | Guest |
| Joseph | Tedesco | Hitachi Energy | Member |
| Jesus | Nunez | MGM TRANSFORMER | Member |
| William | O'Keefe | DuPont | Member |
| Erik | Tarango | Olsun | Request Membership |
| Ion | Radu | Hitachi Energy | Request Membership |
| Paul | Weyandt | Schneider electric | Member |
| Tyler | Falvey | JST Power Equipment | Guest |
| Benjamin | Guinand | Power Magnetics Inc | Request Membership |
| Dipeshkumar | Patel | Hyper Solutions | Request Membership |
| Aniruddha | Narawane | Voltaris | Member |
| David | Stankes | 3M | Guest |
| Sam | Attaguile | 3M Company | Guest |
| Renjie | Fu | ERMCO | Member |
| Pouneh | Davoudi | Delta Star | Member |
| Pugazhenth | Selvaraj | Forgent Power | Request Membership |
| David | Walker | MGM Transformers | Member |
| Mohsen | Mostafaei | Eaton Corporation | Request Membership |

C57.12.91 WG did not meet in Bonita Springs as this document is now in ballot. Chair of the WG reminded members to vote on this ballot.

Chair pointed out that the Chairs of 12.01 and 12.91 are attempting to keep both document on the same voting schedule.

D.4.8 Revision of C57.96 Loading Guide

Aniruddha Narawane

Aniruddha was not able to attend the DTSC but Chair David Walker provided update. Initial revision was voted on last spring. The comment resolution / review of ~ 180 comments was completed this summer. Following the review, the Comment Resolution group decided to conduct another review of the entire document.

As the PAR expires this year, it is not possible to complete the balloting process in time before PAR expires. Aniruddha asked if the DTSC could consider extending the PAR for another year.

Joe Tedesco made a motion to extend the PAR for the revision of C57.12.96 for another year. The motion was seconded by Colby Lovins. Motion was approved unanimously.

D.4.9 Revision of C57.16 Air Core Reactors

Arturo Del Rio

C57.12.16 completed REVCOM review and has been approved.

D.4.11 Revision of C57.124 Partial Discharge

No report given as WG did not meet. Chair suggested to table discussion regarding this standard as it would be reviewed in old business section of the agenda.

D.4.12 Task Force on General Purpose Transformers in IEEE Standards - Paul Weyandt

Chair: Paul Weyandt

Vice Chair: Aniruddha Narawane

Secretary: Joseph Tedesco

This was the first meeting of the PAR Study Group Task Force for Dry-Type General Purpose Transformers. The meeting was held in the Captiva Meeting Room and Paul Weyandt called the meeting to order at 4:45 PM.

To save time, introductions were skipped.

There were 38 people present in the meeting. With this being the first meeting of the task force, there were no quorum requirements, and anyone who wanted to be a member could request membership, 26 guests requested membership.

Dave Stankes reviewed the purpose of the task force as discussed when it was established at the Dry-Type Subcommittee meeting during the Spring 2025 Meeting in Denver, CO. The task force was to determine what changes needed to be made to accommodate testing and specification of dry-type general purpose transformers within IEEE.

Ken McKinney asked whether this task force would be intending to match UL 1561 or UL 5085 in scope. There was some discussion that seemed to point toward UL 1561.

There were further discussions about the voltages to be covered, especially considering efforts to harmonize low voltage standards between UL and CSA and cover up to 1000 V. Casey Ballard pointed out that it would be appropriate for the output of this task force to be a report recommending to the Dry-Type Subcommittee what changes should be made in C57.12.01 and C57.12.91 to accommodate general purpose transformers.

The differences that were identified between general purpose (UL, NEMA, etc.) and IEEE medium voltage were ratio testing and ratio tolerances (due to the low number of turns), partial discharge, impulse testing, overload (200%) testing, k-factor/harmonic loads, and temperature testing. It was also discussed how there are sometimes difficulties measuring the resistance in LV windings, particularly aluminum. The need for the enclosure standard to accommodate both voltage ranges was also discussed.

The most straightforward approach to deal with this matter was to extend C57.12.01 and C57.12.91 to lower voltages. Casey B. pointed out that this was the ideal time to do so because both those standards were in ballot and the recommendation report could be written by the time they were ready to submit new PARs.

Joe Tedesco pointed out that it was important to make sure that whatever changes we made that were consistent with other existing general purpose transformer standards (UL, NEMA, etc.). Tim-Felix Mai pointed out that IEC does not treat LV transformers differently than MV transformers. Paul Weyandt added that it was also important that we not contradict existing standards. To be either inconsistent or contradictory would be confusing and not in the best interest of the industry.

Shawn Nunn was planning to discuss with Patrycja Jarosz about collaborating with UL regarding enclosures classifications, and he agreed to include in the discussion questions about general purpose standards.

Paul W. identified the standards that we would need to reference in this work: UL 1561, C57.12.55, and NEMA ST20. Joe Tedesco mentioned that there were some things covered in NEMA ST20 that we didn't want to cover in IEEE. Colby Lovins pointed out that NEMA ST20 covered down to 250 VA. There was some further discussion about how much we should try to tackle, but ultimately Casey B suggested the best approach was to not try to add everything all at once.

Action: Write a report out to the subcommittee about decreasing the range in C57.12.01 and C57.12.91 to 1 V (or whatever is appropriate) and 10 kVA.

Paul W. planned to look at harmonizing with UL first.

Action: Paul W. requested that all members review the pain points (potential conflicts) between C57.12.01 and C57.12.91 and UL and NEMA. Send them to him, and he will compile the list.

Paul W. would make a request during the Dry-Type subcommittee meeting to extend this task force for the Spring 2026 meeting.

The meeting was adjourned at 5:36 PM.

Chair of the DTSC approved the continuation of this TF.

ATTENDANCE**Annex D**

| Role | First Name | Last Name | Affiliation |
|-------------|-------------------|------------------|---------------------------|
| Member | Sam | Attaguile | 3M |
| Member | Casey | Ballard | DuPont |
| Guest | William | Coughlin | Metglas |
| Member | Sami | Debass | EPRI |
| Member | Marco | Espindola | Hitachi Energy |
| Guest | Curtis | Frye | 3M |
| Member | Renjie | Fu | ERMCO |
| Member | Bob | Fyrer | EIS |
| Member | Ken | Klein | Johnson Coil |
| Member | Moonhee | Lee | Hammond Power Solutions |
| Guest | Aleksandr | Levin | Weidmann |
| Member | Colby | Lovins | Federal Pacific |
| Member | Tim-Felix | Mai | Siemens Energy |
| Member | Ken | McKinney | UL Solutions |
| Member | Luis Felipe | Mendez | JST Power |
| Member | Mohsen | Mostafaei | Eaton Corp. |
| Vice Chair | Aniruddha | Narawane | Voltaris Power |
| Member | Nam Tran | Nguyen | TT Electronics |
| Member | Jesus | Nunez | MGM Transformer |
| Member | Shawn | Nunn | Hitachi Energy |
| Member | Sean | O'Keefe | DuPont |
| Guest | Agustin | Ortega | Siemens Energy |
| Guest | Dipeshkumar | Patel | Hyper Solutions |
| Member | Caroline | Peterson | Xcel Energy |
| Member | Chris | Powell | Intermountain Electronics |
| Guest | David | Ramos | MGM Transformer |
| Member | Brian | Sonnenberg | GE Vernova |
| Member | Dave | Stankes | 3M |
| Guest | Kerwin | Stretch | Siemens Energy |
| Member | Erik | Tarango | Olsun |
| Member | Val | Tatu | Powersmiths |
| Secretary | Joseph | Tedesco | Hitachi Energy |
| Guest | Orlando | Urbinez | JST Power |
| Member | David | Walker | MGM Transformer |
| Member | Evanne | Wang | DuPont |
| Chair | Paul | Weyandt | Schneider Electric |
| Guest | Leon | White | Hedrich NA |
| Member | Grace | Yuan | Hitachi Energy |

D.5 Old Business

D.5.1 Status of C57.124 Guide to PD testing in Dry-type transformers

The Chair reviewed current situation regarding the revision of C57.124. Explained that this document is similar to the C57.113 document for liquid filled transformers. C57.124 has completed the ballot process earlier this year, but since then no further progress has been made. PAR for C57.124 expires at the end of this year, so something must be done.

Chair presented three potential paths forward:

- 1) Do nothing and let PAR expire and let document go into Inactive Reserve.
- 2) Request a PAR extension and complete the revision
- 3) Let this document go into Inactive Reserve, but request that the next time when C57.113 comes up for revision, add information related to Dry-type transformers into this document. This would create a single guide for partial discharge testing.

Chair had brought up these proposals at Adcom earlier in the week and option 3) was viewed favorably. The initial thought from Adcom was that if option 3) was chosen that the document would reside in Dielectric Tests SC.

Chair requested feedback regarding the three proposals at the DTSC meeting and some discussion in favor of option 3) ensued.

Chair asked if anyone would like to make a motion to propose option 3) as a path forward. **Sasha Levin made a motion to go forward with options 3), which recommends letting the document go into Inactive Reserve, but request that the next time C57.113 is up for revision information related to Dry-type transformer be added to the document. Casey Ballard seconded the motion.**

Discussion on the motion:

Sasha asked if we could request that the C57.113 revision work could begin sooner. Chair confirmed that this request could be made.

Question was raised if the C57.113 was harmonized with IEC, and if bringing in information on dry-type would impact this. No one at the meeting knew if there would be any impact.

Casey Ballard requested a friendly amendment to the motion, requesting that the combined document reside in Performance Characteristics SC as Dielectric Tests SC scope only includes liquid filled transformers. The Chair stated that the motion on the floor did not include reference as to where the standard would reside, and as such the motion could stand as is without revision.

The motion was passed unanimously.

D.5.1 Current Status of DTSC documents

Chair asked that the people listed on the document report (posted on the Transformer Committee website) check to make sure that contact information, etc. is correct. A number of items that need to be updated were noted. Corrections should be forwarded to the Chair.

Documents that will be up for revision in the coming years include C57.12.51 and C57.12.60. Evanne wang confirmed her interest in serving as Chair for revision of C57.12.60.

To begin the process of revision of C57.12.60 the Chair sited the need for the creation of a TF to develop a PAR for the revision of C57.12.60 with Evanne Wang as TF Chair. As Chair has the ability to create a TF within the SC, the TF is now formed and will meet at the Spring meeting if not sooner to begin their work.

D.6 New Business

D.6.1 New TF looking at PD for Wind and Solar

Sasha noted that this new TF was formed withing the Dielectric Tests SC . He would like to know the details regarding the work being performed by the TF. Chair will investigate and report back.

D.6.2 C57.12.51 status

Joe Tedesco asked work supporting the revision of this document should begin as it expires in 2029. Did not think many changes will be required. A TF would need to be formed to develop a PAR for the revision of the document.

Casey Ballard suggested that the TF also investigate whether the document should remain a stand alone document or should the information be included within another dry type document.

Chair suggested that the TF be formed to determine what exactly should be done with the C57.12.51 document. Joe Tedesco volunteered to become this TF Chair.

Names of volunteers that would work on the TF were collected and included:

Chris Powell
 Renjie Fu
 Ken Klein
 Pugazhenthil Selvaraj
 Joe Tedesco
 Colby Lovins
 Val Tatu
 Tim-Felix Mai

With no further business, the meeting was adjourned at 2:34 PM.

Chairman: David Walker

Vice Chairman: Aniruddha Narawane

Secretary: David Stankes (prepared meeting minutes)

Dry-Type SC Meeting Attendees

| First Name: | Last Name: | Affiliation: |
|--------------------|-------------------|---------------------|
| Alan | Fujimori | Romagnole |
| Aleksandr | Levin | Weidmann |
| Arturo | Del Rio | HSP-US |
| Benjamin | Guinand | Power Magnetics |
| Brian | Sonnenberg | Iti |
| Caroline | Peterson | Xcel Energy |

| | | |
|-------------|----------------|----------------------------------|
| Casey | Ballard | DuPont Nomex |
| Chris | Powell | Intermountain Electronics |
| Colby | Lovins | Federal Pacific |
| Daniel | Schwartz | Quality Switch |
| David | Stankes | 3M |
| David | Walker | MGM transformer |
| David | Caverly | Trench Limited |
| Evanne | Wang | DuPont Nomex |
| Fernando | Duarte | Hitachi Energy |
| Henry | Pinto | Island Associates Inc |
| Jesus | Nunez | MGM TRANSFORMER |
| John | John | Virginia Transformer Corporation |
| Joseph | Tedesco | Hitachi Energy |
| Kenneth | Klein | Johnson |
| Klaus | Pointner | Trench Austria GmbH |
| Mike | Iman | MGM Transformers |
| Mike | Sharp | Trench Limited |
| Mike | Nolte | Kiewit |
| Moonhee | Lee | Hammond Power Solutions |
| Nam Tran | Nguyen | TT Electronics |
| Paul | Weyandt | Schneider Electric |
| Pugazhenth | Selvaraj | Forgent power |
| Renjie | Fu | ERMCO |
| Saif | Hossain | Trench Limited |
| Sean | O'Keefe | DuPont |
| Sean | O'Keefe | DuPont |
| Sergio | Hernandez Cano | Hammond Power Solutions |
| Shawn | Numn | Hitachi Energy |
| Thien | Pham | Siemens Energy |
| Tim-Felix | Mai | Siemens Energy |
| Val | Tatu | Powersmiths |
| Sam | Attaguile | 3M Company |
| Sam | Attaguile | 3M Company |
| Patrycja | Jarosz | IEEE SA |
| Jim | McBride | JMX High Voltage |
| Christopher | Gunter | Siemens Energy, Inc |
| Alejandro | Macias | CenterPoint Energy |