IEEE PES TRANSFORMERS COMMITTEE
Power Transformers Subcommittee
SPRING: MARCH 24th, 2025
1:45pm-3:00pm MDT – Centennial G (3rd Floor)

UN-APPROVED
These minutes are on the agenda to be approved at the next meeting

Working Group C57.135 - IEC/IEEE 60076-57-135

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 (MDT) on Monday March 24th, 2025, with "Welcome & Chair's remarks".
2) Details about attendance:
   - Attendance: 58
   - Members: 19
   - Guests: 39
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) Participant behavior
   - The slides on "Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct" have been presented.
9) Membership Roster displayed.
10) Quorum check
    - Total number of members is 27 requiring 14 members for quorum.
    - 19 members were present. → Quorum was achieved.
11) Approval of agenda
    - Eric Davis presented motion to approve the agenda
    - Marcus Stank provided second.
    - Motion was unanimously approved by Working Group members
12) Approval of meeting minutes from fall 2024 were posted
    - The Meeting Minutes were posted on the PTRC website.
    - Eric Davis presented motion to approve the agenda.
    - Marcus Stank provided second.
    - Motion was unanimously approved by Working Group members.
13) Dual Logo and IEC status updated by Kevin Juchem and Ewald Schweiger
    - IEC TC 14 Plenary meeting in Rome Italy April of 2024 decided to form a MT (Maintenance Team) with title 'phase-shifting transformers' and scope 'to maintain standards dealing with phase shifting-

transformers projects'. MT 60076-57-PST has been established to work on the revision of IEC/IEEE 60076-57-1202 and IEC/ IEEEE 60076-57-135 and appointed Kevin Juchem as convener.

- Kevin Juchem provided update on international participants of IEC team.
- Ewald Schweiger reiterated how this makes alignment of IEC and IEEE easier for this document.

14) Mike Thompson, PSRC (Power Systems Relaying and Controls Committee) liaison provide update on C37.245 (IEEE Guide for the Application of Protective Relaying for Phase-Shifting Transformers)
    - PSRC met in January and discussed updating C37.245 in parallel with IEC/IEEE 60067-57-135.
    - Subcommittee agreed to form a task force to support the revision of our PST Guide / Standard.
    - Next PSRC meetings will be in May and September this year.
    - May meeting will be earliest that a PAR study group for C37.245 can be formed.
    - Update conclude and opportunity was presented to membership for discussion. No discussion or questions were presented.

15) Topic 1 – Definitions:
    - Luc Dorpmanns presented a review of definitions from the Standard and the guide.
    - In most cases the definitions align well.
    - Recommendation is to keep and use definition list from standard and use this in guide.
    - Christoph Ploetner commented that IEC just finished the IEC definitions and will provide this to Luc.
    - Motion:
        (1) Luc Dorpmanns made motion to: "use definitions as we have in the standard for the guide ".
        (2) Kevin Juchem seconded the motion.
        (3) After much good discussion, the motion was unanimously approved.
        (4) Details of discussion prior to vote on motion:
            (a) Joe Watson commented on use of figures and need to clarify decision not to have figures in definitions.
            (b) Luc Dorpmanns responded that figures are separate in guide from definitions.
            (c) Mike Thompson commented if we do not have definitions will they go into the IEEE technical guideline?
            (d) Ewald Schweiger responded he did not know and would check.
            (e) Christoph Ploetner commented that IEC does not allow figures in definitions.
            (f) Ewald Schweiger suggested we use IEC as template and have the figures in an Annexes.
            (g) Sanjay Patel pointed out that the IEC in the short circuit document does have figures in the definition.
            (h) Christoph Ploetner indicated that the IEC will be removing figures from definitions in the future.
            (i) Kevin Juchem offered that we are not creating new definitions so best may be to retain same approach as before.
            (j) Trent Williams commented that the IEEE Dictionary can have multiple definitions for the same term, and we might be re-inventing the wheel.
            (k) Ewald Schweiger asked if there was further discussion. None being offered, the motion was voted on and approved.

16) Topic 2 – Changes in content
    - Kevin Juchem reviewed several sections, (5.4, 6.3, 9, 10 and 12)
        (1) Section 5.4 – Suggest this to move to surge coordination.
        (2) Section 6.3 – Suggest updating the nameplate section.
        (3) Section 9 – suggest updating the Controls systems.

Working Group C57.135 - IEC/IEEE 60076-57-135

(4) Section 10 – Should be referenced in Standard.
(5) Section 12 – PST modes for low flow .
  (a) Suggest Annex A for other solutions such as ARS (Advance Retard Switch).
  (b) Suggest Annex B for figures/other etc.

- Audience participated in considerable discussion after presentation.
- Audience Discussion Details:
  (1) Joe Watson commented discussion was all good.
  (2) Sanjay Patel asked is the ARS switch patented? Is Maschinenfabrik Reinhausen the only manufacturer? If so, should not be in guideline and suggest Tom Prevost should be consulted.
  (3) Ewald Schweiger requested of audience if anyone would investigate if ARS were patented.
  (4) Joe Watson indicated he did not believe it is patented but may need a release letter to mention it.
  (5) Sanjay Patel asked if he (Joe) was sure.
  (6) Ewald Schweiger said he would lead point of investigation on Patent or Trademark.
  (7) Trent Williams indicated that ARS can be mentioned but there is a procedure to follow.
  (8) Mike Thompson commented that the main concern is you cannot write a standard to give a monopoly. Think of other ways to do the same thing. Also possible is a letter of assurance is obtained indicating the technology is made available you can.
  (9) Sanjay Patel was skeptical about how available the technology is if it is single sourced.
  (10) Ewald Schweiger repeated his call to audience to assist in checking on this. Sebastian Rehkopf took the task to investigate the status. Also, stated that the precaution taken was to move the ARS out of the Standard and into the Guide.
  (11) Kevin Juchem indicated that the guide describes a functionality and use in a product, it is not users fault that only one manufacturer makes this.
  (12) Ewald Schweiger asked group if any concerns to move items as proposed by Kevin Juchem.
  (13) Mike Thompson suggested that control systems section should still be removed as it needs to be updated, modernized and improved.
  (14) Joe Watson stated that nameplates need to have PST specific information added and included in document.
  (15) Kevin Juchem also preferred to have additional information in the guide.
  (16) Alexander Kraetge stated that updates to testing may be difficult when IEC and IEEE base lines are a little different.
  (17) Luc Dorpmans reminded audience that the history of the guide was before the standard was developed so there may be some concerns and now is opportunity to work things out.
  (18) Joe Watson indicated testing guide would be helpful to include information on some things that need to be done a little different in field vs. factory such as temporary test bushings etc. versus the actual procedures in the standard.
  (19) Mike Thompson indicated anything factory testing should be in the standard, but commissioning testing in the field may be useful in a guide.
  (20) Joe Watson reiterated that there is much factory testing which cannot be repeated in the field.
  (21) Sanjay Patel indicated this can be true for other transformers, so why make distinction for PST?
  (22) Kevin Juchem stated in the special PST testing guide, the first document uses lots of “shall” statements. The “shall” term should not be used in guides.
  (23) No motions were presented, and no further discussion was had. The chair then moved forward with meeting status and next steps.

UN-APPROVED

These minutes are on the agenda
to be approved at the next meeting

Working Group C57.135 - IEC/IEEE 60076-57-135

17) Status, and next steps
    - Feedback from PRC Committee meeting on TF and status on PAR SG C37.245 Protection guide (Michael Thompson).
    - Update PAR to new title: Technical guideline for the Application, Specification and Testing of Phase-Shifting Transformers.
    - Continuation of review and collection of your feedback.

18) Old Business
    - None

19) New Business
    - Joe Watson recommended that same people work on Guide and Standard to keep best alignment of both documents.

20) Adjournment
    - Meeting adjourned at 2:43pm.

21) Next meetings (planned):
    - Virtual meeting – might be scheduled before October 2025.
    - In-person meeting F25 – October 19-23, 2025 in Bonita Springs, FL.

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
Antosz	Stephen	Consultant	G
Beaudoin	Jason	Weidmann Electrical Technology	G
Calitz	David	Siemens Energy	G
Colopy	Craig	Retired	G
Crockett	Janet	Fayettville PWC	G
Czernorucki	Marcos	Hitachi Energy	G
Davis	Eric	Consultant	M
Dorpmanns	Luc	Royal SMIT Transformers B.V.	M
Foster	Patrick	NextEra Energy	G
Goglia	Slaven	Koncar Power Transformers Ltd	G
Gustavsson	Niklas	Hitachi ABB Power Grids	M
Hamoir	Didier	Transformer Protector Corp	G
Janakiraman	Balaji	Virginia Transformer Corporation	G

Working Group C57.135 - IEC/IEEE 60076-57-135

Jang	Donghyun	LS Electric	G
Jarosz	Patrycia	IEEE SA	G
Jeong	Chanmin	HD Hyundai	G
Juchem	Kevin	Hitachi Energy	M
Kaineder	Kurt	Trench Austria	M
Kasonga	Mick	Oncor Electric	G
Kim	Heonsu	LS Electric	G
Kraetge	Alexander	Omicron Electronics	G
Lopes	Ricardo	Efacec Transformers	G
Magela junior	Geraldo	Siemens Energy	G
Mendez Zamora	Omar	Prolec GE	M
Mikulecky	Filip	Koncar Power Transformers Ltd	G
Munoz	Martin	Orto de Mexico	G
Musgrove	Ryan	OG+E	M / Chair PTSC
Natale	Anthony	HICO America	G
Neild	Kris	Megger	G
Orozco	Eduardo	GE Grid Solutions	G
Park	Dean	Hyosung HICO	G
Patel	Sanjay	TD-Smit Transformers	M
Ploetner	Christoph	Siemens Energy	M
Rehkopf	Sebastian	Maschinenfabrik Reinhausen GmbH	M
Saeed	Rana	Attendee	G
Sarkar	Amitabh	Virginia Transformer Corporation	G
Schindler	Stefan	Maschinenfabrik Reinhausen GmbH	G
Schrammel	Alfons	Siemens Energy	M
Schwartz	Danny	Quality Switch	G
Schweiger	Ewald	Siemens Energy	M / Chair
Segovic	Dario	Koncar Power Transformers Ltd	G
Simon	Preston	Electrical Technologies	G
Singh	Amitkumar	Con Edison Company of New York	G
Sohail	Muhammad Abdullah	Trench Canada	G

Working Group C57.135 - IEC/IEEE 60076-57-135

Solano	William	Voltyx	G
Stank	Markus	Maschinenfabrik Reinhausen	M
Stechschulte	Kyle D	AEP	M
Thomas	Scott	Hitachi Energy	G
Thompson	Michael	SEL Engineering Services, Inc.	M
Torchia	Leonard	PSE&G	G
Viereck	Karsten	Maschinenfabrik Reinhausen	G
Vir	Dharam	Prolec GE Waukesha	G
von Gemmingen	Richard	Dominion Energy	M / Secy
Watson	Joe	JD Watson and Associates Inc.	M
Weisensee	Matthew	Pacificorp	M
White	Joe	Power Engineers	G
Williams	Trenton	Advanced Power Technologies	M
Zhou	AnnaBelinda	JST Power	G