

Revision of C57.158 Guide for Application of Tertiary and Stabilizing Windings

IEEE/PES Transformers Committee
Spring 2024

Chair: Enrique Betancourt R.

Co-Chair: Dr. Xose M. Lopez-Fernandez

Secretary: Kayland Adams

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Agenda

1. Administrative
 1. IEEE Patent Policy and Call for Patents
 2. IEEE SA Copyright Policy
 3. Review of the agenda
2. Introductions and Quorum count
3. Approval of Minutes from Fall Meeting
4. Task Forces to Review current document of C57.158 - E.Betancourt
- ~~5. Presentation of the “Seed material” for TFs~~
6. Open Discussion
7. New Business
8. Adjournment

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

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

WAYS TO INFORM IEEE

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

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

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PATENT-RELATED INFORMATION

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

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

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

**If you have questions, contact the IEEE SA
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Administrator at patcom@ieee.org**

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IEEE-SA Copyright Policy, see

Clause 7 of the IEEE-SA Standards Board Bylaws

<https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7>

Clause 6.1 of the IEEE-SA Standards Board Operations Manual

<https://standards.ieee.org/about/policies/opman/sect6.html>

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<http://standards.ieee.org/faqs/copyrights.html/>

IEEE-SA Best Practices for IEEE Standards Development

http://standards.ieee.org/develop/policies/best_practices_for_ieee_standards_development_051215.pdf

Distribution of Draft Standards (see 6.1.3 of the SASB Operations Manual)

<https://standards.ieee.org/about/policies/opman/sect6.html>

2. Quorum? Introductions

WG's Membership

37 Members in the Group
19 Members required to
achieve quorum

3. Approval of Minutes from previous meeting

4. Task Forces for Revision of C57.158 document

- Leadership appointment
- Sign-up of volunteers

TF1

Leader: Emilio Morales

TF1 General editorial overview

- Review of current version of C57.158 for any visible editorial improvements.
- Confirm harmonization with recent changes in C57.12.00, C57.12.90, C57.12.10, C57.105 and C57.163, Other? [\[Access to the documents required\]](#).
- Review CIGRE's Transformers' Green Book for concurrent references to TW or SW application. [\[Access to the document required\]](#).

DELIVERABLES

- List of possible editorial (or technical) improvements and suggested new text.
- List of (extracted) paragraphs from reviewed documents, that refer to TW or SWs, and possible suggested action for revised C57.158 (delete, change or add segments).

TF2

Leader: Dr. Xose Lopez-Fernandez

TF2 Recommendations for Y-connected transformers without a delta connected winding.

- Expand section about Y-connected transformers without a TW or SW.

DELIVERABLES

- Paragraph(s) with recommendations to mitigate operation issues related to zero-sequence flux effects in three-phase transformers. (References for protection schemes?).
 - General reference about when a delta-connected winding could be spared (possible extension to what is already stated in the Guide].
 - Definition of Z_0 for a three-phase, three-legged core transformer.

TF3

Leader: [K.Kulasek, to be confirmed]

TF3 Improvement and, or simplification of some concepts in the Guide

- Describe more concisely the application of multi-winding transformers with different power factor loads. [Add an example]
- Expand discussion on transferred voltages to half-floating stabilizing windings (one corner grounded), and those with current limiting reactors (review also Annex D of IEC 60071-2018). [Access to IEC document required].
- Short-circuit requirements considering all windings connected to voltage sources.
- Recommendations for bushings layout of large TW, if heat run test required. Comments regarding heat-run request for a SW.

DELIVERABLES

Suggested paragraphs to simplify, or to improve existing material in the Guide, with references for a deeper understanding, if necessary.

TF4

Leader: E.Betancourt

TF4 New recommendations for TW or SW

- Some experiences with collector transformers in Renewables Plants (solar, wind, batteries?). **Tertiaries for axial-split, Y-connected LVs.**
- Section of grounding of neutrals in Y-connected transformers. **[Reference?]**
- Caution for application of outer-most Tertiaries: electrostatic voltage pick-up.
- Effects from Reverse Power Flow?
- **Circulating currents in delta of single-phase banks.**

DELIVERABLES

- Proposed new paragraph(s) on (possible) recommendations to evaluate or control above-described phenomena, with references to further understanding of the subject (if applicable).

TF- Seed material

- **Draft document of C57.158 [full document or segments, depending on IEEE SA allowance].**
- **Input sketches for understanding of technical questions [TF 3 and 4].**
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Notes from Group's discussion

Notes...

Next Steps

1. New MS-Word version of C57.158, to start developing new Draft. **Done.**
2. TF Consolidation.
3. Development of material for WG's discussion.
4. Next (2) meeting(s): Group's discussion and approval
4. Organization and cleaning of new draft document

8. New Business

9. Adjournment

Rosters?!!!