

Annex E HVDC Converter Transformers and Smoothing Reactors Subcommittee

**October 28, 2019, 3.15 pm
Columbus, Ohio, USA**

**Chair: Ulf Radbrandt
Vice Chair: Les Recksiedler
Secretary: Pending (Ulf Radbrandt was secretary in this meeting)**

E.1 Introduction / Attendance

Introductions were made and the attendance list circulated.

There were 9 members and 20 guests present. 2 new requests for membership was received.

The total membership of the SC is 14. We needed at least a total of 8 members to be present in order to have a quorum. This was achieved.

The agenda for this meeting, that was distributed via email October 08, was presented. Ulf Radbrandt wanted to add a request for a volunteer to be secretary of the SC to New Business. The agenda was unanimously approved.

E.2 Approval of the minutes of the March 25, 2019 meeting in Anaheim

The minutes from the Anaheim meeting were presented and then unanimously approved.

E.3 Brief report on the meeting of the Administrative SC by Ulf Radbrandt

All WG and TF chairs should continue with the call for essential patents at their meetings.

It is not allowed to share Copy Right material without written permission.

TF for continuous revision of sections of general standards, i.e. C57.12.00 and C57.12.90 must first get approval from their respective SCs before sending material to the TFs or WGs for those standards.

Entity PAR for guide for vibration tests will be handled by Performance Characteristics SC.

We should be active in sponsorship of Entity WGs so that we can affect the documents.

E.4 Working Group Reports

The IEEE P1277 WG meeting was conducted as part of the HVDC SC meeting. The WG chair, Klaus Pointner, took over as chair of the meeting.

E.4.1 WG IEEE P1277 - Dry-Type and Oil-Immersed Smoothing Reactors and Dry-Type Converter Reactors

Chair: Klaus Pointner (klaus.pointner@ieee.org)
Vice-Chair: -
Secretary: Ulf Radbrandt (temporary)

E.5.1.1 Introductions and Call for Patents

The WG has different membership than the SC and different rosters. No WG roster was circulated, the “cloud-in-hand” information from the RFID system was used for verification of participation.

There were 10 members and 19 guests present. No new request for membership was received.

The total membership of the WG is 15. We needed at least a total of 8 members to be present in order to have a quorum. This was achieved.

Klaus Pointner asked if anyone was aware of any essential patents that could be an issue for our work, but no one was aware of that.

The agenda for this meeting was included in the SC agenda and was thereby also unanimously approved.

The minutes from the Spring 2019 meeting in Anaheim was included in the SC minutes and were thereby also unanimously approved.

E.5.1.2 Ballot of Draft 9

Draft 9 is in Ballot until November 8.

The return rate so far is 58%, 42 out of 55. All WG and SC members that hadn't voted yet was encouraged to do that in order to meet the 75% return rate. 10 more votes were needed for that.

Klaus Pointner presented the technical comments and below is a list of the most important topics listed, including discussion:

- Comment: AC power test should be valid also for converter reactors.
Discussion: Not accepted. AC power test should not be included for converter reactors since there are no need for that due to the much lower inductance compared to big smoothing reactors. Lightning impulse test is fully suitable to verify the turn to turn insulation integrity. AC power test will anyway remain for small smoothing reactors in order to not make the standard too complicated.
- Comment: Applied AC voltage test should also be applicable for AC side located converter reactors.
Discussion: Accepted.
- Comment: DC withstand voltage test should also be applicable for AC side located converter reactors if they are stressed by DC voltage, e.g. for asymmetric converters.
Discussion: Accepted.
- Comment: DC withstand voltage test should be a dry test for indoor reactors.
Discussion: Accepted.
- Comment: The reference to NEMA 107 should be in the normative part of the text.
Discussion: Accepted.
- Comment: The walk around method should be main test method for noise measurement.
Discussion: Accepted
- Comment: The wet DC withstand voltage test should be performed on the whole arrangement with reactor, structure, all insulators and possible corona rings. It should not easily be replaced by only a test of a support insulator.
Discussion: Partly accepted. The reactor can be replaced by a mock-up, but it is important to achieve the same electrical field as in operation. If only one insulator is tested, then it is important to have a suitable section/mock-up of the reactor to give the same electrical field distribution and water distribution as if the whole reactor including insulators arrangement is tested.

No comment seems to be difficult to resolve. Klaus Pointner has added all comments into a version of Draft 9. He will distribute that version to the WG members.

A Ballot Resolution Group will be created to handle the comments. That work should be started shortly after the Ballot has closed and be finished before the end of this year. A new draft for the recirculation ballot should be distributed early next year. Target is to submit the standard to RevCom for approval for the May 2020 session.

The chair, Klaus Pointner, asked for volunteers to the Ballot Resolution Group. Volunteers, beside himself, were:

- Pierre Riffon
- Mike Sharp
- Ulf Radbrandt
- Les Recksiedler

E.5.1.6 New Business

- There was no new business

E.5.1.7. Adjournment

The WG meeting was adjourned and the SC chair, Ulf Radbrandt, took over as chair of the meeting.

E.5 HVDC Tutorial

It was decided that we will investigate if we can do an HVDC tutorial. One problem is that the technical area is so large. It can be difficult to compress in all topics in a 75 minutes tutorial including time for questions and answers. There must not be too many topics with too little time for each or more than one session may be required. Ulf Radbrandt will put together an idea how it could be done and distribute that to the SC members for comments.

E.6 Old Business

There was no old business

E.7 New Business

A new secretary is requested for this subcommittee. Volunteers are welcome to report interest. The vice chair, Les Recksiedler, will be a temporary secretary until a new secretary is in place.

E.8 Adjournment

The meeting was adjourned at 4:10 pm.