

# Annex E Transformers and Reactors for HVDC Applications Subcommittee

Nov 15, 2021, 3.45 pm Central Time USA  
Virtual Webex meeting

**Chair:** Ulf Radbrandt (ulf.radbrandt@hitachi-powergrids.com)  
**Vice Chair:** Les Recksiedler (absent)  
**Secretary:** Klaus Pointner (klaus.pointner@ieee.org)

## E.1 Introduction / Attendance

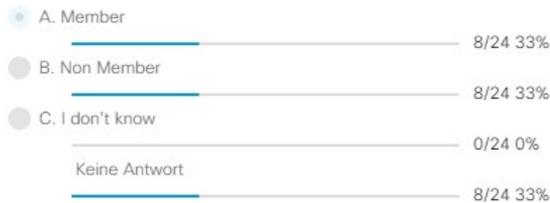
Introductions were made by calling the participants in person and the attendance was checked by a poll.

There was a total of 24 persons in the meeting, 8 members and 16 guests present. 2 new requests for membership were received. Qualification for membership in the SC will be verified by the SC Chair.

Actual Membership:

Subgroup Name	Membersh	Role	Participation Stat	Type	First Name	Last Name	Company	IEEE Member
*SC HVDC Conve	Active	Member	Active	Committee Member	David	Caverly	Trench Limited	Yes
*SC HVDC Conve	Active	Member	Active	Committee Member	Solomon	Chiang	The Gund Company	Yes
*SC HVDC Conve	Active	Member	Active	Committee Member	Eric	Davis	Burns & McDonnell	Yes
*SC HVDC Conve	Active	Member	Active	Active Participant	Alexander	Gaun	Coil Innovation GMBH	Yes
*SC HVDC Conve	Active	Member	Active	Committee Member	Peter	Heinzig	Weidmann Electrical Technology	Yes
*SC HVDC Conve	Active	Member	Active	Committee Member	John	John	Virginia Transformer Corp.	Yes
*SC HVDC Conve	Active	Member	Active	Committee Member	Christoph	Ploetner	t.b.a.	Yes
*SC HVDC Conve	Active	Secretary	Active	Committee Member	Klaus	Pointner	Trench Austria GmbH	Yes
*SC HVDC Conve	Active	Chair	Active	Committee Member	Ulf	Radbrandt	Hitachi Energy	Yes
*SC HVDC Conve	Active	Vice-Chair	Active	Committee Member	Leslie	Recksiedler	Manitoba Hydro	Yes
*SC HVDC Conve	Active	Member	Active	Committee Member	Pierre	Riffon	Pierre Riffon Consultant Inc.	Yes
*SC HVDC Conve	Active	Member	Active	Committee Member	Michael	Sharp	Trench Limited	Yes
*SC HVDC Conve	Active	Member	Active	Committee Member	Rogério	Verdolin	Verdolin Solutions Inc.	Yes
*SC HVDC Conve	Active	Member	Active	Committee Member	Waldemar	Ziomek	PTI Transformers	Yes

## Screenshot of attendance verification poll



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

The agenda for this meeting, that was distributed via email Nov. 8, was presented. Due to lack of time for preparation, the presentation of the condition monitoring needs to be postponed to the spring meeting. The agenda was unanimously approved considering this change.

The list of all attendees of the meeting is shown here:

First Name	Last Name	Company	Role
Ulf	Radbrandt	Hitachi Energy	Chair
Klaus	Pointner	Trench Austria GmbH	Secretary
David	Caverly	Trench Limited	Member

Eric	Davis	Burns & McDonnell	Member
Alexander	Gaun	Coil Innovation GMBH	Member
Pierre	Riffon	Pierre Riffon Consultant Inc.	Member
Michael	Sharp	Trench Limited	Member
Waldemar	Ziomek	PTI Transformers	Member
William	Boettger	Boettger Transformer Consulting LLC	Guest
Jagdish	Burde	Virginia Transformer Corp	Guest
Daniela	Ember Baciú	Hydro-Quebec IREQ	Guest
Evgenii	Ermakov	Hitachi Energy	Guest
Thomas	Falkenburger	Coil Innovation USA, Inc.	Guest
Feras	Fattal	Manitoba Hydro	Guest
Curtiss	Frazier	Ameren	Guest
Ali	Ghafourian	H-J Enterprises, Inc.	Guest
Deepak	Kumaria	Applied Materials	Guest
Xose	Lopez-Fernandez	Universidade de Vigo	Guest
Sylvain	Plante	Hydro-Quebec	Guest
Alvaro	Portillo	Ing. Alvaro Portillo	Guest
Afshin	Rezaei-Zare	York University	Guest
Hemchandra	Shertukde	University of Hartford	Guest
Jos	Veens	SMIT Transformatoren B.V.	Guest
Peter	Werelius	Megger	Guest

## E.2 Approval of the minutes of the April 26, 2021 virtual meeting

The minutes from the virtual Spring 21 meeting, that was distributed via email Nov. 08, 2021 were presented and then unanimously approved. Klaus Pointner mentioned the great content of the HVDC tutorial part 1. This content can be used for training purposes and backup information.

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

New officers of the IEEE Transformerscommittee from 2022:

- Ed teNyenhuis will be new chair
- David Wallach will be new vice chair.
- Bill Griesacker will be new secretary

AMS system will be replaced by a new system – Activity leaders - please make a back-up of your WG details prior December 31, 2021 including membership, attendance, roasters etc.

PAR lifetime of 4 years shall be attended in future. WG should plan to complete work within 3 years to keep 1 year for balloting and comment resolution. It will be more difficult to get extensions of PAR's and a second extension will very seldom be accepted. If the job is not done then the WG must start all over with a new PAR. A consequence might be that it will be more common with extra meetings (between the ordinary committee meetings).

Activity chair, vice chair and secretary shall not be from the same company and preferably be representing both users and manufacturers.

### E.4 Condition Monitoring

Presentation by Evgenii Ermakov from Hitachi Energy Sweden is postponed to the spring meeting.

### E.5 Brief information about the upcoming tutorial

Thursday Nov. 18, 2021 will be the second part of the HVDC tutorial dealing with equipment aspects covering the following scope:

HVDC Tutorial 2, HVDC Equipment Aspects (LCC and VSC)	Duration, minutes	Responsible
Special stresses and testing of converter transformers (LCC and asymmetric VSC)	15	Pierre Riffon
Special stresses and testing of smoothing reactors	15	Klaus Pointner
Special stresses and testing of converter reactors (only VSC)	15	Klaus Pointner
Special stresses and testing of DC bushings	10	Waldemar Ziomek
Special stresses and testing of AC and DC filter equipment, for LCC, with focus on the filter reactors	10	Alexander Gaun
Time for questions	10	

### E.6 Working Group Reports

Currently no active working group. The IEEE1277 has been published 2020 (10 years stability until Dec 31, 2030). The dual logo standard IEC/IEEE 60076-57-129 was published 2017 and is good until Dec 31, 2027

### E.7 Future Work of this Subcommittee

As there is currently no active WG, the question about possible tasks has been raised by the SC Chair. Possible areas are condition assessment for converter transformers, which have some specific implications. Some basic insights have been given by Evgenii (assessment of datasets of sister units in service, fingerprint information etc.). Site measurements of the units are sometimes an issue (e.g. physical wall between DC and AC bushings).

Peter Werelius may also add input to the upcoming presentation on condition monitoring and will get in touch with Evgenii.

Pierre Riffon confirmed that there is currently no gap or need to update or extend the subcommittee standards. Both are in a good shape.

Waldemar proposes to add some work on maintenance and condition assessment particularly for converter transformers and bushings as future work.

Alexander Gaun reported that there are two ongoing study committees at CIGRE, the B4-89 (Condition Health Monitoring and predictive maintenance of HVDC Converter Stations – final report expected Sept 2022) and B4-90 (Operation and maintenance of HVDC and FACTS Facilities – final report expected Oct 2023).

The SC chair pointed out the strategic importance of the availability of HVDC schemes, thus preventive maintenance and close monitoring and assessment of the main equipment is decisive. However, future work shall be in line with the scope of the SC HVDC.

The SC chair was asking for some input material from the users and manufactures which can add value, if available. Also technical presentation at coming SC meetings are welcome.

If someone would like to hold a presentation regarding maintenance/preventive maintenance of main HVDC equipment is warmly welcome to do so. Please contact the SC chair.

**E.8 Old Business**

There was no old business

**E.9 New Business**

There is no new business

**E.10 Adjournment**

The meeting was adjourned at 4:25 pm.