



IEEE PES Switchgear ADSCOM C37.301
Meeting Minutes
Burlington VT, Oct 16, 2018

I. Call to order

- JM Torres called to order the regular meeting of the C37.301 at 4:15 PM on April 3, 2019 at Hilton Burlington Lake Champlain Hall.

II. Roll call

- JM Torres conducted a roll.
- Members: 9 of 13 members were present
- Guests: 20 in person + 2 web
- Quorum: Yes (7 needed)
- Total: 31

III. Patent declaration

- None identified.

IV. Review & approval of agenda

- Approved – Motion Albert Livshitz, Second D. Hook, no objections.

V. Review & approval of minutes from last meeting(F18)

- S. Parsi reviewed the minutes and gave a status update.
- Approved – Motion Albert Livshitz, Second D. Hook, no objections.

VI. Call for volunteers for the position of secretary followed by appointment

- No volunteers, it was discussed that Paul Gingrich had previously expressed interest after the last meeting, he was not present in this meeting. The recommendation has been for the secretary to be a veteran of IEEE with a good knowledge of the interworking of SA.

VII. Review of current membership and recognizing new members

- IEEE requirements for membership were reviewed. i.e. attending 2 or last 4 meeting.
- 3 new members (Bob Higginbotham, Jialin Li, Robert Cohn) were added.
- 2 members were removed (Amir Khosravi, Richard Frye)
- Total member count is 14.
- Membership will be closely monitored and attendants at web meetings will also be required.

VIII. Update on IEEE STD4- HVTT work on Partial Discharge

- S. Parsi gave a brief update from the Jan 2019 meeting of HVTT in Anaheim California. HVTT has finalized the scope and purpose statements and the WG is

forming. Detlev Gross has agreed to chair this group. S. Parsi will serve as an officer. HVTT is addressing the offline charge-based methods of PD measurement and not dealing with specifics. Hence 37.301 must develop the material for the gap and incorporate the STD4 material along side of it. The timeline for both these documents is the same, hence 37.301 cannot wait until STD4 has been completed.

- The following was read from the HVTT minutes:

Final agreed Title / Scope / Purpose (Draft 3):

Final Title: *Guide for the Detection, Measurement and Interpretation of Partial Discharges*

Final Scope: *This Guide applies to the detection, measurement and interpretation of partial discharges (PD) occurring in or around the insulation of electrical apparatus or its components through phase resolved measurement of the associated apparent charge appearing at the terminals when an alternating voltage is applied.*

Topics addressed include:

- *information on basic discharge physics and material related defect discharge mechanisms,*
- *basic principles of electrical PD calibration, detection, and measurement using the apparent charge method,*
- *explanation and interpretation of phase resolved PD patterns associated with common insulation defects,*
- *explanation and interpretation of the effects of time and voltage level (electric field stress) on PD behavior associated with common insulation defects,*
- *tutorial information regarding the internal propagation of high frequency signals resulting from partial discharges occurring in high-voltage equipment, and the resulting impact on measurement sensitivity.*

While the information presented is generally applicable to measurements made both in the laboratory and in the field, a separate clause is included to offer guidance on special considerations and techniques that can be especially useful in noisy environments (e.g. field measurements).

Where apparatus-specific testing procedures or requirements are involved, these shall be specified by the relevant Technical Committee.

Final Purpose: *The purpose of this Guide is to improve the reader's ability to make sensitive, repeatable and therefore useful PD measurements. It is intended to serve as a supplement to other referenced documents by providing additional relevant tutorial and background information regarding the electrical detection of PD in high-voltage insulation.*

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IX. Discuss iMeetCentral work process and file sharing

- S. Parsi gave an overview of iMeetCentral.
- Most of the working group members and guests have been added to the workspace. It was mentioned that if someone was not added to email S. Parsi
- Folks were requested to upload all relevant material on the workspace.

X. Review individual equipment classes/ stakeholders that the WG would like to address

- WG agreed to that the PD standard should address the needs of the individual equipment classes, hence input and feedback from individual WGs will be needed.
- The following equipment classes were identified. S. Parsi has reached out via email but hasn't had much luck getting responses. It was discussed that other folks from C37.301 would attempt to contact the following folks and inform them of our activities.
 - o Common requirements → C37.100.1 → Dave Stone
 - o HV CB → C37.09 → Xi Zhu
 - o Circuit switchers → C37.016 → Peter Meyer
 - o HVGIS → C37.122 → Ryan Stone?
 - o MV GIS → C37.20.9 → Eldridge Byron
 - o AC HV air switch → C37.30.1 → Ken Harless
 - o Standard Requirements for Overhead, Pad Mounted, Dry Vault, and Submersible Automatic Circuit Reclosers and Fault → C37.60 → Bill Hurst
 - o Standard for Pad Mounted, Dry Vault, Submersible Fault, and Overhead Fault Interrupters for alternating current systems up to 38 kV → C37.62 → Antone Bonner
 - o Standard Requirements for Overhead, Pad-Mounted, Dry-Vault, and Submersible Automatic Line Sectionalizers for AC Systems → C37.63 → Vacant
 - o Requirements for Oil-Filled Capacitor Switches for AC Systems (1kV to 38kV) → C37.66 → Harry Hirz
 - o IEEE Standard for Metal-Clad Switchgear → C37.20.2 → Michael Wactor
 - o IEEE Standard for Metal-Enclosed Interrupter Switchgear (1 kV-38 kV) → C37.20.3 → Allan Morse
 - o IEEE Standard for Indoor AC Switches (1 kV to 38 kV) for Use in Metal-Enclosed Switchgear → C37.20.4 → Bob Cohn
 - o IEEE Guide for Testing Metal-Enclosed Switchgear Rated Up to 38 kV for Internal Arcing Faults → C37.20.7 → Michael Wactor
 - o IEEE Standard for Metal-Enclosed Bus → C37.23 → Vacant
 - o IEEE Standard for the Qualification of Switchgear Assemblies for Class 1E Applications in Nuclear Power Generating Stations → C37.82 → Dave Riffe
 - o C37.30.1 Carl Reigart.
 - o C37.04 is Steve Cary
 - o C37.013 is the GCB document and the chair is Mirko Palazzo

XI. Review External Contributors

- S. Parsi mentioned that he has contacted a few external contributors, it was requested that if others committee members are aware of knowledgeable external contributors to please forward the contact information:
- Bill Higinbotham (EA Tech) and Jialin Li (Hydro One) joined the meeting via web as a result.

XII. Identify key areas of concern

- WG agreed to address the following topics in the standard. It was noted that we are in early stages of brain storming and the topics can be merged, modified, added or deleted after some deliberation.
- Since HVTT is working on some of the same topics it was discussed that C37.301 would prioritize certain topics and allow HVTT to work on others in parallel.

Topic	Priority
Qualification, production, commissioning & maintenance requirements	C37.301
Acceptance criteria for each class of equipment	C37.301
Localization and assessment	C37.301
Assessment based on insulation type	HVTT
PRPD Pattern Recognition	HVTT
Test equipment setup up and blocking impedance for filtering □ 301	HVTT
Clearance requirements for PD free setup	HVTT
Filtering and Signal processing	HVTT
Environmental effects on results	C37.301
Sensitivity	HVTT
Background noise floor	HVTT
Coupling methods	C37.301
Applied voltage frequency (0.1 Hz VLF, near Power Frequency 20-60 Hz)	C37.301
Instrument transformers	C37.301
Pre stress voltage and duration	HVTT & C37.301
Measurement frequencies	C37.301
TEV technology overview and limit ations	C37.301
UHF technology overview and limit ations	C37.301
Online Vs Offline	C37.301
Ops experience and statistics	C37.301

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XIII. Review Jeff Andle (Emerson Comments)

- The following was read from Jeff's email after the last meeting:

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I'd like the standard to consider classes of equipment by function and not just spell out what each current offering does. I think back to my efforts in chem-bio detection in the 90's and find the sensor hierarchy has some application here:

1. *Detectors – devices which are ubiquitous and simple, but are not diagnostic. This class of instrument is a first line that might be placed everywhere at entry-level costs and is only intended to trigger a higher level instrument. Note the higher level could just be another function of the detector. EG a dB scale of acoustic emission, UHF dB levels, UV, TEV, etc. without higher level*
2. *Sensors – devices which make measurements that may suffer high false positives and may not be quantitative, but that have fast response times and perform some level of verification and classification. The sensor may still be ubiquitous – or at least rapidly deployed – and is activated on a detector alarm or may be operated continuously.*
3. *Instrument – devices with a reasonable degree of calibration – preferably employing multiple detection methods for validation – and offering results that are locally actionable (for PD, taking a shutdown for corrective actions, etc.)*
4. *Lab validation – not relevant to PD at the operational scale, but for chem-bio it was the step required for accusation or counter-action. In this context the level could address out of scope activities such as root cause analysis of failures or near failures.*

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XIV. Works Assignment Identification

- All members and guests were requested to perform a document search and forward all relevant or interesting information to be uploaded in the shared work space. Attention to copy write may be needed. **Action all members**

XV. Web meeting date identification

- It was noted that there is a significant amount of work to be done to achieve the objectives. In order to remain on track, in addition to the two on location meetings per year, four short web meetings will also take place. Meetings will be hosted via the IEEE Joinme platform.
- Meeting dates will be arranged by members based on pole, and then the invite will be sent to all other guests.

XVI. Next in person meeting date & location

- Oct.6 to Oct 10, 20 Catamaran Resort, San Diego, CA

XVII. Open floor for new business

- None identified

XVIII. Meeting adjournment

- Adjourned at 5:45 PM

XIX. Summary of actions

- All members to identify/update stakeholders and contributors as needed.
- All members (guests are also encouraged to participate) to send in all relevant documents.
- S. Parsi to schedule next meeting.

XX. Attendees

Role	First Name	Last Name	Company	04/30/2019
Guest	John	Harley	FirstPower Group LLC	X
Guest	Frank	DeCesaro	Eaton's Power Systems Division	X
Guest	Miklos	Orosz	Myers Controlled Power	X
Member	Albert	Livshitz	CE Power Engineered Services	X
Guest	Antonio	Mannarino	PSE&G	X
Guest	Peter	Glaesman	PCORE Electric Company, Inc.	X
Member	Michael	Wactor	Powell Industries, Inc	X
Member	Robert	Cohn	Powercon Corp.	X
Guest	Christopher	Borck	Eaton's Power Systems Division	X
Guest	David	Beseda	S&C Electric Co.	X
Guest	Dustin	Sullivan	Hubbell Power Systems	X
Chair	Jean-Marc	Torres	Eaton Corporation	X
Guest	James	Ruebensam	S&C Electric Co.	X
Guest	Francois	Trichon	Schneider Electric	X
Guest	Li	Yu	Eaton Corporation	X
Member	Jeffrey	Door	The H-J Family of Companies	X
Member	Daniel	Hook	Western Electrical Services	X
Member	Brian	ONeil	RMS Energy	X
Member	Jeffrey	Ward	Doble Engineering Company	X
Guest	Mark	Pattison	H-J Family of Companies	X
Guest	Torsten	Wirz	ABB AG	X
Guest	Simarjit	Chouhan	Crown Technical Systems	X
Guest	Danish	Zia	UL LLC	X
Vice-Chair	Sean	Parsi	Dexotech	X
Guest	Christopher	Jarnigan	Southern Company Services	X
Guest	Christopher	French	Eaton Corporation	X
Guest	Michael	Boulus	PSE&G	X
Guest	Edward	Hester	Entergy	X
Guest	Nadia	El khattabi	Hydro-Quebec	X
Member	Bill	Higginbotham	EA Technologies	WEB
Member	Jialin	Li	Hydro One	WEB