

PC57.19.00 - WG for the Revision of IEEE Standard General Requirements and Test Procedure for Power Apparatus Bushings

10:45 AM to 12:00 PM CST on Monday, November 15, 2021
On-Line Virtual Meeting

Unapproved Meeting Minutes

WG Chair Peter Zhao presided over the meeting, with David Stockton as the Secretary.

Member list was displayed, and a live poll was performed confirming there was not a quorum established by lacking of two votes. There were 81 attendees.

The WG Chair presented the agenda with the call for patents, none were received, and that copyright information can be found on the Transformer Committee website. The Chair asked if there were any objections or comments regarding the S21 minutes and none were received. As there was no quorum the approval of the minutes will be delayed until the next meeting.

The chair reported that there were two off-schedule meetings conducted between Spring and Fall meeting, during which, the proposals and recommendations from the review groups were discussed and the dispositions from the discussions were made, pls see notes posted on-line.

Comment	Proposed Change	Disposition Status (accepted/rejected/revise)	Disposition Detail
Need to further clarify the bushing carries the	...such that the bushing carries the current and the rod does not.	Rejected	08/25/21 Webex meeting. Unnecessary due to non-current carrying designation in definition.
We have no definition for "ground layer"	add: ground layer : the outermost conductive layer of the internal insulation.	Revised	08/25/21 Webex meeting: Outermost conductive layer of bushing which is intended to be solidly grounded during operation.
We should add a note that dissipation factor used by IEC is practically the same.	Note: Other standards exist which refer to "dissipation factor" which is mathematically different from power factor, but when used to evaluate bushings is virtually identical in value and meaning.	Rejected	08/25/21 Webex meeting: Recommend move to C57.19.100. "Note: Dissipation factor and Power factor values are nearly the same when evaluating bushings."
We need to add definition for RIS	add: resin impregnated synthetic insulated bushing : A bushing in which the internal insulation consists of a wound core of untreated synthetic material and subsequently impregnated under vacuum with a filled or unfilled curable resin.	Revised	08/25/21 Webex meeting: A bushing in which the internal insulation consists of a wound core of synthetic material and subsequently impregnated under vacuum with a filled or unfilled curable resin. 09/23/21 Webex meeting: A bushing in which the internal insulation consists of a wound core of synthetic polymer and (subsequently) impregnated with a filled or unfilled curable resin.
Should we define as "C2" and include test taps?	The capacitance between the voltage tap or test tap and the flange and typically referred to as C2.	Revised	08/25/21 Webex meeting: Accept change, and make a change to "main capacitance" in 3.2.4 definition to 'typically referred to as C1'. 09/23/21 Webex meeting: Revise proposal in column H as follows: The capacitance between the voltage tap or test tap and the flange and typically referred to as C2. Refer to section 6.2 of this document for further clarification. Revise section 6.2: Since the capacitance from tap to ground (C2) is not controlled and influenced by factors external to the bushing, the tap is not intended for use as a voltage divider during normal operation.

The remaining meeting time focused on review of the comments received from the review group with the attendees.

The chair mentioned that one of the original plan for this Fall's meeting was to conduct a vote process to confirm the dispositions from the review groups. As there was no a quorum established during the meeting, and this vote

process will be conducted through emails in coming months. The chair encouraged the members to participate in this vote process.

Meeting was adjourned at 12:15pm.

Respectfully Submitted,

WG Secretary David Stockton (generated by Peter Zhao)

Recorded Attendance as provided by PSAV data following the virtual meeting

Role	First Name	Last Name	Company
Chair	Peter	Zhao	Hydro One
Secretary	David	Stockton	H-J Family of Companies
Member	Jeff	Benach	Weidmann Electrical Technology
Member	Barry	Beaster	H-J Enterprises, Inc.
Member	Stephen	Jordan	Tennessee Valley Authority
Member	Devki	Sharma	Entergy
Member	Richard	vonGemmingen	Dominion Energy
Member	Scott	Digby	Duke Energy
Member	Thomas	Spitzer	City Transformer Service Co.
Member	J. Arturo	Del Rio	Siemens Energy
Member	Shibao	Zhang	PCORE Electric
Member	Sebastien	Riopel	Electro Composites ULC
Member	Eric	Weatherbee	PCORE Electric
Member	Mario	Locarno	Doble Engineering Co.
Member	Troy	Tanaka	Burns & McDonnell
Member	Egon	Kirchenmayer	Siemens Energy
Member	Marek	Kornowski	Polycast International
Member	Eric	Schleismann	Southern Company Services
Member	William	Solano	Instrument Transformer Equip Corp
Member	Eric	Euvrard	RHM International
Member	Niklas	Gustavsson	Hitachi ABB Power Grids
Member	Bruno	Mansuy	Trench France SAS
Member	Robert	Middleton	RHM International
Member	Raja	Kuppuswamy	Dynamic Ratings, Inc.
Member	Brad	Staley	Salt River Project
Member	Lee	Tyler	Warco, Inc.
Guest	Susan	McNelly	Xcel Energy
Guest	Dennis	Marlow	DenMar TDS Transformers
Guest	William	Boettger	Boettger Transformer Consulting LLC
Guest	Juan	Castellanos	Prolec GE
Guest	Javier	Arteaga	ABB Enterprise Software Inc
Guest	Dinesh	Sankarakurup	Duke Energy
Guest	Philip	Hopkinson	HVOLT Inc.
Guest	Christopher	Baumgartner	We Energies
Guest	Gael	Kennedy	GR Kennedy & Associates LLC
Guest	Ewald	Schweiger	Siemens Energy
Guest	Rogério	Verdolin	Verdolin Solutions Inc.
Guest	Gary	Hoffman	Advanced Power Technologies
Guest	Neil	Strongosky	Memphis Light, Gas & Water
Guest	John	Brafa	Hub City Consulting Services
Guest	Shamaun	Hakim	WEG Transformers USA Inc.

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Guest	Jose	Gamboa	H-J Family of Companies
Guest	Poorvi	Patel	Electric Power Research Institute (EPRI)
Guest	Juan Carlos	Cruz Valdes	Prolec GE
Guest	Daniel	Sauer	EATON Corporation
Guest	Anthony	Natale	HICO America
Guest	Huan	Dinh	Hitachi ABB Power Grids
Guest	Krishnamurthy	Vijayan	PTI Transformers
Guest	Ryan	Musgrove	Oklahoma Gas & Electric
Guest	Jos	Veens	SMIT Transformatoren B.V.
Guest	David	Murray	Tennessee Valley Authority
Guest	John	John	Virginia Transformer Corp.
Guest	Steven	Brzoznowski	Bonneville Power Administration
Guest	Christopher	Whitten	Hitachi ABB Power Grids
Guest	Kurt	Kaineder	Siemens Energy
Guest	Orlando	Giraldo	H-J Family of Companies
Guest	Kristopher	Neild	Megger
Guest	Jason	Varnell	Doble Engineering Co.
Guest	Jonathan	Reimer	FortisBC
Guest	Anthony	Franchitti	PECO Energy Company
Guest	Diego	Rincon	Electroporcelana Gamma
Guest	Yves	Vermette	Electro Composites ULC
Guest	Kris	Zibert	Allgeier, Martin and Associates
Guest	Raka	Levi	Retired
Guest	Wayne	Ellis	Memphis Light, Gas & Water
Guest	William	Whitehead	Siemens Energy
Guest	Anastasia	O'Malley	Consolidated Edison Co. of NY
Guest	Feras	Fattal	Manitoba Hydro
Guest	Peter	Kleine	US Army Corps of Engineers
Guest	Malia	Zaman	IEEE
Guest	Brady	Nesvold	Xcel Energy
Guest	George	Partyka	PTI Transformers
Guest	Nitesh	Patel	Hyundai Power Transformers USA
Guest	Jorge	Cantu de Leon	SPX Transformer Solutions, Inc.
Guest	Juan	Ramirez	CELECO
Guest	John	Reagan	Oncor Electric Delivery
Guest	Kyle	Stechschulte	American Electric Power
Guest	Yaquan (Bill)	Li	BC Hydro
Guest	Matthew	McFadden	Oncor Electric Delivery
Guest	Jeffrey	Door	H-J Family of Companies
Guest	Tim	Rocque	SPX Transformer Solutions, Inc.
Guest	Stefan	Schindler	Maschinenfabrik Reinhausen
Guest	Raymond	Frazier	Ameren
Guest	Onome	Avanoma	Transformer Consulting Services Inc.

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Guest	Roger	Hedlund	Hitachi ABB Power Grids
Guest	Kayland	Adams	SPX Transformer Solutions, Inc.
Guest	Susan	Bonfiglio	Western Area Power Admin.
Guest	Edmundo	Arevalo	Bonneville Power Administration
Guest	Nicholas	Podany	Bureau of Reclamation
Guest	Brandon	Dent	Memphis Light, Gas & Water
Guest	Mubarak	Abbas	Siemens Industry
Guest	Dipakkumar	Patel	Instrument Transformer Equip Corp
Guest	Didier	Hamoir	Transformer Protector Corp
Guest	Olle	Benzler	Megger
Guest	Michael	Warntjes	American Transmission Co.
Guest	Jacques	Vanier	Electro Composites (2008) ULC
Guest	Derek	Hollrah	Burns & McDonnell
Guest	Nick	Sewell	Alabama Power
Guest	Jonathan	Deverick	Dominion Energy