

SWITCHGEAR ASSEMBLIES SUBCOMMITTEE (SA S/C)
MINUTES OF THE SPRING 2023 MEETING
Sheraton Sand Key Resort, Clearwater Beach, Florida
Wednesday, 1:30-3:15 PM, April 19, 2023

The meeting was called to order by SA S/C Chair, D. Moser, at 1:32 PM on April 19, 2023:

Attendance

- Members: 29 of 38 members present – Quorum was met.
- Guests: 41
- Total: 70

Attendance list is recorded at the end of the meeting minutes.

1. Introduction of Members and Guests

Members and guests introduced as recorded below.

2. Reviewed IEEE Patent, Copyright slides, and reminder against commercial topics

Verbal call for any issues– none identified.

3. Approval of Meeting Agenda

The Spring 2023 agenda Revision 2 was presented for review.

Motion to approve by M. Lafond, Second by R. Hartzel.

Motion approved by unanimous consent.

4. Approval of SA S/C Meeting Minutes

[F22SAmiREV0.pdf](#)

Minutes (link above) from the Fall 2022 meeting were posted on-line.

Motion to approve meeting minutes by M. Lafond, Second by M. Valdes.

Motion approved by unanimous consent.

5. Working Group, Task Force, Study Group & Ad Hoc Status Reports

- a. C37.20.1 - IEEE Standard for Metal-Enclosed Low-Voltage (1000 Vac and below, 3200 Vdc and below) Power Circuit Breaker Switchgear**
Mike Lafond: Meeting minutes are provided. Verbal update of WG activities.

WG met with quorum. Draft 5 comments reviewed with good progress. Ad-hoc formed to review 6.2.5 and 6.2.6 test clauses for recommendation at the fall meeting; another ad hoc formed to review temperature rise testing for circuit breakers in 20.1 gear; another to compare terms withdrawable, removable, and drawout in draft.

WG achieved copyright approval for all material to be used from either internal or external IEEE documents.

PAR expires 12-31-2024. Documents posted in iMeet Central.

Actions for SA S/C Chair: No further action required.

- b. C37.20.3 - IEEE Standard for Metal-Enclosed Interrupter Switchgear (1 kV-48.3 kV)**
Ron Hartzel: Minutes are provided. Verbal update of WG activities.

WG met with quorum. Covered balance of comments from last ballot. Going out for another 10-day recirculation ballot. Expect to be submitted to Revcom ahead of October deadline.

PAR expires Dec 2023

Actions for SA S/C Chair: No further action required.

- c. C37.20.4 - IEEE Standard for Indoor AC Switches (1 kV-52 kV) for Use in Metal-Enclosed Switchgear**
Bob Cohn: Minutes are provided. Verbal update of WG activities.

WG met with quorum. Created task force to change references to IEEE C37.30.4 from IEEE 1247 (2005). Achieved IEEE copyright approval. WG targeting a ballot as soon as possible this year after ad hoc inputs.

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Motion by B. Cohn for permission to submit a PAR extension request. R. Boyce second. Motion approved by unanimous consent.

T. Burse recommended two-year PAR extension request

PAR expires Dec 2023

Actions for SA S/C Chair: No further action required.

- d. C37.20.6** - IEEE Standard for 4.76 kV to 48.3 kV Rated Ground and Test Devices Used in Enclosures

Ron Hartzel: Minutes are provided. Verbal update of WG activities.

WG met with quorum. Reviewed output from 3 ad-hoc groups and incorporated into standard. Ready for ballot.

Motion by R. Hartzel requesting permission from the S/C to proceed to ballot. Second by M. Wactor. Motion approved by unanimous consent.

Actions for SA S/C Chair: No further action required.

- e. C37.20.7** - IEEE Guide for Testing Switchgear Rated Up to 52 kV for Internal Arcing Faults

Dan Hrcir: Minutes are provided. Verbal update of WG activities.

WG met with quorum. Comments were reviewed and addressed in working group meeting.

Motion by D. Hrcir and amended by M. Lafond requesting permission to create a PAR study group to create an application guide for arc resistant switchgear. Second by M. Wactor. Motion approved by unanimous consent.

M. Valdes will be chair. M. Lafond will be secretary.

Note that working group will continue with 20.7 progress then remove the current annex guide with a note pointing to the new guide and leaving other annexes as is from 20.7 once guide is approved.

Motion by D. Hrcir requesting permission from the S/C to proceed to ballot after receipt of revisions of Annex K input from C37.23 working group. Second by D. Sigmon. Motion approved by unanimous consent.

Actions for SA S/C Chair: No further action required.

- f. C37.20.9** - IEEE Standard for Metal-Enclosed Switchgear Rated 1 kV to 52 kV Incorporating Gas Insulating Systems

T. Woodyard: Minutes are provided. Verbal update of PAR Study Group activities.

WG met with quorum. Revised amendment PAR request shared during meeting and attached to these meeting minutes. Incorporated changes but realized the need for scope change.

Motion by T. Woodyard to request permission to submit revised amendment PAR request from SA to revise the scope of the PAR to 1) cover clarification of requirements for the refilling and monitoring of MEGIS and 2) include Substations Committee as co-sponsors of the document. Second by M. Wactor. Motion approved by unanimous consent.

Actions for the SA S/C Chair: No further action required.

- g. C37.20.10** - IEEE Standard for Definitions for AC (52 kV and Below) and DC (3.2 kV and Below) Switchgear Assemblies

Dan Delfino: Minutes are provided. Verbal update of WG activities

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WG met with quorum. Discussed and revised definition of safe distance and clarification of circuit breakers. Responded or incorporated all comments. Ready for ballot.

Motion by D. Delfino requesting permission from the S/C to proceed to ballot. Second by T. Burse. Motion approved by unanimous consent.

Actions for SA S/C Chair: No further action required.

h. C37.21 - IEEE Standard for Control Switchboards

Christo Thomas: Minutes are provided. Verbal update of PAR Study group activities

WG met with quorum. PAR was approved since Spring meeting so held first meeting of working group. Will incorporate changes into draft and circulate for comments.

Actions for SA S/C Chair: No further action required.

i. C37.23 - IEEE Standard for Metal Enclosed Bus

Jared Hines: Minutes are provided. Verbal update of WG activities.

WG met with quorum. Internal IEEE copyright approval was received between meetings and latest draft was circulated ahead of this meeting. Group worked through comment resolution during this meeting. Two ad hocs were created that will report back to working group for another draft circulation for comments between meetings. One of those ad hocs is feeding a proposed revision to C37.20.7.

PAR expires Dec 2024

Actions for SA S/C Chair: No further action required.

j. C37.24 - IEEE Guide for Evaluating the Effect of Solar Radiation on Outdoor Metal-Enclosed Switchgear

Terry Woodyard: Minutes are provided. Verbal update of WG activities.

WG met with quorum. WG went through third draft of document. Formed five new ad hocs to review areas of the document for improvement.

Actions for SA S/C Chair: No further action required.

k. C37.81 – IEEE Guide for Seismic Qualification of Class 1E Metal-Enclosed Power Switchgear Assemblies

Russell Boyce: Minutes are provided. Verbal update of SG activities.

PAR study group met to review the existing document for any scope change needed for PAR. No scope change needed. Changes needed are editorial so far not technical.

Motion by R. Boyce requesting permission from the S/C to submit a PAR to update the document to referenced standards. Second by R. Hartzel. Motion approved by unanimous consent.

Actions for SA S/C Chair: No further action required.

l. C37.82 – IEEE Standard for the Qualification of Switchgear Assemblies for Class 1E Applications in Nuclear Power Generating Stations

Russell Boyce: Minutes are provided. Verbal update of SG activities.

PAR study group met to review the existing document for any scope change needed for PAR. No scope change needed. Changes needed are editorial so far not technical.

Motion by R. Boyce requesting permission from the S/C to submit a PAR to update the document to referenced standards. Second by R. Hartzel. Motion approved by unanimous consent.

Actions for SA S/C Chair: No further action required.

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- m. **C37.100.8** – IEEE Guide for Methodologies to Demonstrate Expected Life of Lubricants Used in Switching Devices (This is an ADSCOM document of interest to SA S/C members)

Doug Edwards: Minutes are provided. Verbal update of WG activities.

Reviewed descriptions of equipment and testing. More work needed on timing within tests. Planning one or two virtual meetings between in-person meetings. Ad hoc created that D. Moser is chairing and looking for volunteers to join.

Actions for SA S/C Chair: No further action required.

- n. **C37.122.2** - IEEE Draft Guide for the Application of Gas Insulated Substations 1 kV to 52 kV (This is an ADSCOM document of interest to SA S/C members)

T. Woodyard: Minutes to be provided to ADSCOM. Verbal update of WG activities

T. Woodyard communicated that the document is at Revcom, and he is working with editors on document clean up.

Actions for SA S/C Chair: No further action required.

6. Old Business

a. IEC Activities

J. Webb: Verbal update of status.

J. Webb communicated on TC 17C that IEC 62271-200 (Metal-Enclosed & Metal-Clad Equipment) has stabilized at edition 3 and is out for ballot on amendment 1. IEC 62271-100 (Circuit Breakers) working group avoided making any major changes and is stable at edition 2.

Actions for SA S/C Chair: No further action required.

b. ACS C37 – General Update

J. Webb: Verbal report of ACS C37 activities.

C37.57 is nearing completion and waiting to coordinate with C37.20.3 once it is stable. Since C37.20.3 is at a good place for ballot, John will report back to them to move forward. C37.54 needs a technical change and expect to ballot again in 2-3 weeks, should be stable in a few weeks.

Actions for SA S/C Chair: No further action required.

7. Membership

a. Senior Membership & Award for Young Professionals

Darryl Moser recognized recent members attaining senior status and encouraged all non-senior members to obtain senior membership status.

Senior Membership url:

http://www.ieee.org/membership_services/membership/senior/index.html

b. Switchgear Assemblies S/C Membership

D. Moser: Will review with secretary and advise any updates to members.

c. Main Committee Membership

D. Moser: New Main Committee member recommendations will be made by SA S/C to the Main Committee for consideration.

8. New Business

a. C37.20.2 Study Group formation discussion – T. Woodyard

Brought up in C37.20.10 for clarification. Discussion around interlocks around mechanical versus electrical and allowing for growth and innovation in this area

Will be addressed in C37.20.10 working group.

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- b. Start revisions to / seeking WG Chairs: – D. Moser**
None until 2024

c. WG / Study Group Chairs – Required information

All 3 of the following need to be sent to the SA Subcommittee Secretary no later than Friday, May 5, 2023. darryl.moser@us.abb.com jaredkhines@ieee.org

- 1. SA Document Status – Required action – WG – Document Status & Website Synopsis.**
- 2. WG Meeting Room Requests – Update “SA Document Status” report**

D. Moser: WG, Study Groups and Ad Hocs - Please confirm meeting room requirements with Jared Hines. Meeting room requests are circulated in SA Document status. Be sure that room requests include expected participant size and number of sessions.

3. Working Group Minutes

- d. ADSCOM – Items for SA S/C Chair to discuss at ADSCOM meeting**
No items of note

e. Main Committee Meeting Items – Review items to be presented

Total: 14 documents

Active PARs: 10 - C37.20.1, C37.20.3, C37.20.4, C37.20.6, C37.20.7, C37.20.9a, C37.20.10, C37.21, C37.23, C37.24

2023 Ballot Activity: 1 - C37.20.3

Upcoming PAR Activity: 4 - C37.20.9a revising, C37.81, C37.82, application guide for arc resistant switchgear

Not Active: 2 - C37.20.2, C37.121

f. Upcoming Meetings

1. Fall 2023: San Diego, CA
2. Spring 2024: Ft. Lauderdale, FL
3. Fall 2024: Oklahoma City, OK
4. Spring 2025: TBD
5. Fall 2025: Reno, NV
 - i. Note from D. Edwards that an early review of additional meeting times on Thursdays with potential that ADSCOM and Main Committee meetings move to later Thursdays as early as next meeting.
 - ii. Challenge from D. Edwards to create papers or presentations at completion of standards to explain the work a working group has completed.
 - iii. Adding room blocks for future hotel nights at next meetings to mitigate room shortage

9. Adjourn

Meeting adjourned at approximately 3:05 PM.

Reported by:

Jared Hines
Switchgear Assemblies Subcommittee Secretary
April 19, 2023

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Attendance Record

First Name	Last Name	Company	Role	4/19/2023
Darryl	Moser	ABB	Chair	✓
Jared	Hines	Eaton Corp.	Secretary	✓
Paul	Barnhart	Underwriters Laboratories	Member	✓
Russell	Boyce	Eaton	Member	✓
Ted	Burse	Powell Industries, Inc	Member	✓
Clint	Carne	Schneider Electric	Member	✓
Alex	Cochran	No affiliation	Member	✓
Robert	Cohn	Powercon Corp.	Member	✓
Randall	Creach	Avail Switchgear Systems	Member	✓
Daniel	Delfino	ABB	Member	✓
Jeffrey	Door	The H-J Family of Companies	Member	✓
Doug	Edwards	Siemens Industry, Inc.	Member	✓
Sergio	Flores	Schneider Electric Inc. USA	Member	✓
Keith	Flowers	Siemens Industry, Inc.	Member	✓
Dave	Gohil	Avail Switchgear Systems	Member	✓
Lou	Grahor	Eaton Corporation	Member	✓
Ronald	Hartzel	Eaton Corporation	Member	✓
Dan	Hrncir	Eaton	Member	✓
Michael	Lafond	Underwriters Laboratories	Member	✓
Jeff	Mizener	Siemens Industry, Inc.	Member	✓
Terry	Neighbours	ABB Inc.	Member	✓
Mark	Roberson	Avail Bus Systems	Member	✓
Carl	Schneider	Schneider Electric	Member	✓
Dean	Sigmon	Self-affiliated	Member	✓
Garett	Sims	Eaton Corp.	Member	✓
Kevin	Sippel	Eaton Electric	Member	✓
Donald	Swing	Powell Industries	Member	✓
Christo	Thomas	Schneider Electric	Member	✓
Michael	Wactor	Powell Industries, Inc	Member	✓
Terrance	Woodyard	Siemens Industry Inc.	Member	✓
Koustubh	Ashtekar	JST Power Equipment	Guest	✓
Andreas	Bartels	Powell Industries	Guest	✓
Francis	Beauchemin	Hydro-Quebec	Guest	✓
Randy	Blake	Schneider Electric	Guest	✓
Christopher	Bridges	Eaton	Guest	✓
Robert	Burns	Eaton	Guest	✓
Sudarshan	Byreddy	Burns & McDonnell	Guest	✓

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First Name	Last Name	Company	Role	10/19/2022
Fiori	Coziuc	S&C	Guest	✓
Federico	Di Michele	CESI S.p.A.	Guest	✓
Arkadiusz (Erik)	Doroz	Eaton	Guest	✓
Marc	Foster	Schneider Electric	Guest	✓
Chris	French	Beta Engineering	Guest	✓
Erin	Hardy	Eaton	Guest	✓
Robert	Lau	nVent Hoffman	Guest	✓
J. Dakota	Leopard	Eaton	Guest	✓
Adrian	Lopez	Powell	Guest	✓
Josh	Lustig	Black & Veatch	Guest	✓
Kevin	McGlown	JST Power Equipment	Guest	✓
Ken	McKinney	UL	Guest	✓
Miklos	Orosz	Myers Controlled Power	Guest	✓
Owen	Parks	ABB	Guest	✓
Lalit	Patil	Eaton	Guest	✓
Mark	Pattison	The H-J Family of Companies	Guest	✓
Mark	Peterson	Xcel Energy	Guest	✓
Jeffery	Ricker	SCHNEIDER ELECTRIC	Guest	✓
Tim	Rohrer	Exiscan	Guest	✓
Wahaj	Saleem	Siemens	Guest	✓
Leonel	Santos	Schneider Electric	Guest	✓
Jen	Santulli	IEEE-SA	Guest	✓
Robert	Schuetz	Eaton	Guest	✓
Christopher	Slattery	FirstEnergy	Guest	✓
Lokesh	Solanki	ABB	Guest	✓
Bryan	Tatum	UL	Guest	✓
Andrew	Truman	Black & Veatch	Guest	✓
Marcelo	Valdes	ABB	Guest	✓
Jacob	Walgenbach	Siemens Industry, Inc.	Guest	✓
Jonathan	Wear	JST Power Equipment	Guest	✓
John	Webb	ABB	Guest	✓
Matt	Westerdale	US Bureau of Reclamation	Guest	✓
Eddie	Wilkie	Eaton	Guest	✓

PC37.20.9a

Type of Project: Amendment to IEEE Standard C37.20.9-2019

Project Request Type: Modify / Amendment

PAR Request Date:

PAR Approval Date:

PAR Expiration Date:

PAR Status: Draft

Root PAR: PC37.20.9a

Root PAR Approved on: 14 Feb 2023

Root Project: C37.20.9-2019

1.1 Project Number: PC37.20.9a

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Project Title: Standard for Metal-Enclosed Switchgear Rated 1 kV to 52 kV Incorporating Gas Insulating Systems

Amendment: Clarification of metal-enclosed gas-insulated switchgear (MEGIS) types covered, refilling and monitoring requirements and production test requirements.

Change to Title: Standard for Metal-Enclosed Switchgear Rated 1 kV to 52 kV Incorporating Gas Insulating Systems Amendment: Clarification of metal-enclosed gas-insulated switchgear (MEGIS) types covered, [refilling and monitoring requirements](#) and production test [requirements](#).

3.1 Working Group: PE/SWGR/SASC-WG_C37.20.9 IEEE Standard for Metal Enclosed Switchgear Rated 1kV to 52kV Incorporating Gas Insulation Systems(PE/SWG/C37.20.9 MEGIS)

3.1.1 Contact Information for Working Group Chair:

Name: Eldridge Byron

Email Address: eldridge.byron@schneider-electric.com

3.1.2 Contact Information for Working Group Vice Chair:

Name: Terry Woodyard

Email Address: mr.terrance.woodyard@ieee.org

3.2 Society and Committee: IEEE Power and Energy Society/Switchgear(PE/SWG)

3.2.1 Contact Information for Standards Committee Chair:

Name: Douglas J Edwards

Email Address: doug.edwards@ieee.org

3.2.2 Contact Information for Standards Committee Vice Chair:

Name: Donald Swing

Email Address: d.swing@ieee.org

3.2.3 Contact Information for Standards Representative:

Name: Keith Flowers

Email Address: keith.flowers@ieee.org

3.3 Co-Stds Committee(s):

3.3.1 IEEE Power and Energy Society/Substations (PE/SUB)

Contact Information for Standards Committee Chair:

Name: Joe Warner

Email Address: joe.m.warner@ieee.org

Change to Co-Stds Committee(s):

[IEEE Power and Energy Society/Substations\(PE/SUB\)](#)

4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot:
Apr 2024

4.3 Projected Completion Date for Submittal to RevCom: Oct 2024

5.1 Approximate number of people expected to be actively involved in the development of this project: 25

5.2.a Scope of the complete standard:This standard covers the design, testing, and installation of metal-enclosed switchgear that incorporates gas (typically sulfur hexafluoride, SF6) at higher than ambient pressure as an insulation medium for alternating-current applications rated above 1 kV to 52 kV. The contents of the switchgear may include but are not limited to circuit breakers, switches, bushings, buses,

instrument transformers, cable terminations, instrumentation, metering and controls, and protective relays. In a vertical section of the switchgear, some or all of the medium-voltage compartment(s) shall be composed of a gas pressure system for the primary insulating medium. This standard covers both indoor and outdoor installations.

This standard covers switchgear using sealed pressure systems or closed pressure systems. Switchgear employing controlled pressure systems is not covered by this standard.

This standard also does not cover switchgear that is covered under IEEE Std C37.20.2™, IEEE Std C37.20.3™, or IEEE Std C37.74™-2014 that uses individual components that are gas-insulated such as switches, circuit breakers, and other equipment, nor does it fully cover those components that are covered by their individual component standards.

This standard covers various partition classes of Switchgear for both indoor and outdoor installations including isolated phase. This standard covers both three-phase and single-phase switchgear.

5.2.b Scope of the project: The amendment will address control wire dielectric insulation test requirements, refilling and monitoring requirements and clarify the MEGIS designs covered.

Change to scope of the project: The amendment will address control wire dielectric insulation test requirements, refilling and monitoring requirements and clarify the MEGIS designs covered.

5.3 Is the completion of this standard contingent upon the completion of another standard? No

5.4 Purpose: This document will not include a purpose clause.

5.5 Need for the Project: A project is needed to implement corrections essential to properly test equipment of this type as well as eliminate confusion regarding the types of equipment covered by the document.

5.6 Stakeholders for the Standard: Manufactures, users, purchasers, and third party certifiers of medium voltage equipment.

6.1 Intellectual Property

6.1.1 Is the Standards Committee aware of any copyright permissions needed for this project?

No

6.1.2 Is the Standards Committee aware of possible registration activity related to this project?

No

7.1 Are there other standards or projects with a similar scope? No

7.2 Is it the intent to develop this document jointly with another organization? No

8.1 Additional Explanatory Notes: The clarification activities will include adding text to the scope of the document as follows:

This standard covers various partition classes of switchgear for both indoor and outdoor installations including isolated phase. This standard covers switchgear containing one or more phases.

C37.20.2 - IEEE Standard for Metal-Clad Switchgear

C37.20.3 - IEEE Standard for Metal-Enclosed Interrupter Switchgear

C37.74 - IEEE Standard Requirements for Subsurface, Vault, and Padmounted Load-Interrupter Switchgear and Fused Load-Interrupter Switchgear for Alternating Current Systems up to 38 kV

Change to Additional Explanatory Notes: The clarification activities will include adding text to the scope of the document as follows: This standard covers various partition classes of switchgear for both indoor and outdoor installations including isolated phase. This standard covers ~~both~~ switchgear three-phase containing one and or single-phase more switchgear phases. C37.20.2 - IEEE Standard for Metal-Clad Switchgear C37.20.3 - IEEE Standard for Metal-Enclosed Interrupter Switchgear C37.74 - IEEE Standard Requirements for Subsurface, Vault, and Padmounted Load-Interrupter Switchgear and Fused Load-Interrupter Switchgear for Alternating Current Systems up to 38 kV