

*Minutes for HVDC Switches  
October 10, 2023  
Fall 2023 Meeting – San Diego, CA*

- The working group met for two sessions on October 10<sup>th</sup>.
- 24 participants were in attendance. 9 of 11 members were in attendance for the first session and 8 of 11 members were in attendance for the second session. See the attached attendance roster.
- Attendees introduced themselves and stated their affiliations.
- WG Chair Bill Hurst reviewed the Patent and SA Copyright slides with working group.
  - No participants stated any patent or copyright conflicts with the WG.
- WG Chair Bill Hurst reviewed minutes from the Spring 2023 meeting.
  - Meeting minutes were approved without questions or comments.
- WG member Riyad Kechroud with GE gave a presentation on HVDC systems to the working group. Some of the topics in the presentation included the following:
  - Overvoltages and their origins in HVDC
  - Examples of HVDC schemes
  - Examples of HVDC configurations
  - HVDC Technologies
  - HVDC Disconnect & Earthing Switches
  - Effects of pollution
  - Overload currents in IEEE vs. IEC
- Session 1 ended with the conclusion of Riyad's presentation. Motion to adjourn was made by WG member Danny Hoss and seconded by Stephen Chen. Session 1 concluded at 9:41am.
  
- Session 2 began on 10/10/2023 at 10:15am
- WG Chair shared proposed ratings tables.
  - It was noted that there are different conditions for point to point vs. multiterminal
  - WG discussed that higher creepage insulator in DC application results in a larger BIL than is needed due to pollution, which breaks the insulation coordination with the open gap of the switchgear
    - WG noted that in AC application, if a larger insulator is used, then spark gaps are used to maintain insulation coordination. Is that relevant to DC?
    - Riyad Kechroud commented it has not been a practice he has seen in existing projects.
    - Danny Hoss commented to leave table as-is with gap coordination and allow the customer to decide when a larger insulator is required.
    - In the Draft 4 of the 37.30.7 document, a note is already included under dry impulse and lightning impulse that states that conformance doesn't assure switch maintains 110%. Not included in switching impulse.
  - WG discussed difference in AC and DC requirements for lightning impulse.
    - WG reviewed what is in IEC tables
  - For Draft 5 of the document, WG Chair Bill Hurst is going to complete the following action items:
    - Review if circuit breakers has 1 or 2 ratings tables
    - Remove +10% on switching impulse from the ratings table

- Incorporate tables into draft document.
- Bill proposed keeping the same current ratings in DC as in AC standard.
  - Note: The ratings will be different from IEC, but allows manufacturers and utilities to use same switches between the 2 applications.
  - Bill Hurst is going to make the appropriate changes for current ratings, but the values remain the same.
  - Riyadh pointed out that current ratings are tied to short circuit ratings.
    - Is there IEC short circuit ratings that correlate? Looked at IEC 62271-314 and refers to 6227-5>> Short circuit is 1.5x rated current.
    - Bill Hurst is going to check with Stephen Chen to confirm HVDC circuit breaker ratings.
    - Bill Hurst is going to check with Eros Stella also on short circuit ratings for IEC switchgear.
- Agenda completed and Meeting adjourned at 11:45 am on October 10<sup>th</sup>.

Laura Reid  
WG Vice Chair

WG PC37.30.7 Fall 2023 Attendance

<b>Last Name</b>	<b>First Name</b>	<b>Company</b>	<b>Role</b>	<b>10/10/2023 Session 1 of 2</b>	<b>10/10/2023 Session 2 of 2</b>
Andreyo	Joe	Southern States LLC	Guest	X	
Balasubramanian	Ganesh	Eaton	Guest	X	
Berner	Brian	Power Grid Components	Guest	X	
Blake	Jacob	Hubbell Power Systems	Member	X	X
Boles	Brett	Southern Company	Member	X	X
Chen	Steven	Eaton	Member	X	
Davies	Stacey	Siemens	Guest	X	X
Diallo	Boubacar	Southern States LLC	Guest	X	X
Feven	Mihretu	PG&E	Guest	X	
French	Chris	Beta Engineering	Guest	X	X
Garcia	Kaylor	Utility Solutions	Guest	X	
Hamilton	Lon	Southern States LLC	Guest	X	
Herring	Ricky	Siemens	Guest	X	
Hoss	Danny	Southern States LLC	Member	X	X
Hurst	Bill	GE Renewables	Chair	X	X
Jamal	Shah	Avan Grid	Guest	X	
Kaminski	John	Siemens Industry	Member	X	X
Kechroud	Riyad	GE Grid Solutions	Member	X	X
Kowalik	Pete	Cleveland/Price Inc.	Member	X	X
Panos	Elias	PG&E	Guest	X	
Reid	Laura	Hubbell Power Systems	Vice Chair	X	X
Ross	Rob	Cleveland/Price Inc.	Guest	X	X
Trichon	Francois	Schneider Electric	Guest	X	
Yu	Li	Eaton	Guest	X	