

IEEE PES HVDC & FACTS SUBCOMMITTEE MEETING

2013 IEEE PES Summer Meeting

Minutes of Meeting

24 July 2013

Vancouver, British Columbia

**IEEE HVDC AND FACTS SUBCOMMITTEE
2013 MEETING
13:30 - 15:30 on Wednesday, July 24, 2013
Vancouver, British Columbia**

1 WELCOME AND ANNOUNCEMENTS

Andrew Isaac called the meeting to order at 13:35 and welcomed everyone to the meeting.

2 INTRODUCTIONS

The HVDC & FACTS Subcommittee members made introductions, and the sign-in sheet was distributed. A list of attendees and their contact information is provided in Appendix A.

Ram Adapa gave a pitch for the EPRI HVDC Conference

3 APPROVAL OF THE JULY 2014 MEETING AGENDA

The agenda was reviewed. The agenda was approved as issued

4 APPROVAL OF THE MINUTES FROM THE JULY 27, 2011 SUBCOMMITTEE MEETING

- Motion for approval from Wayne Litzemberger, seconded by Gene Wolf
- Approved by acclamation

5 WORKING GROUP REPORTS

5.1 WG 15.05.02 - Dynamic Performance and Modelling of HVDC Systems and Power Electronics for Transmission Systems

- Close to 50 attended the working group meeting
- Continued progress on test system for load flow, transient stability, small-signal stability. Looking at writing some papers using the system.
- Several presentations at the working group meeting
- Benchmark systems on web page
- Working group chair would like to see a presentation to subcommittee on a published paper on non-VSC FACTS

5.2 WG 15.05.08 - HVDC and FACTS Economics and Operating Strategies

- Paul Marken, WG secretary reported for Mike Henderson
- 52 attended, in a room that seated 30
- They plan to hold panel sessions for a few years and work toward a special publication
- The working group is also considering writing a paper, 12-13 potential contributors.
- Thinking about panel for next General Meeting
- Gene Wolf reminded the working group members to think about things applicable now

5.3 WG 15.05.14 Education on HVDC and FACTS

- Joint meeting and paper session with the Working Group on Bibliography of HVDC and FACTS
- Sparse attendance. Took place during one of the few panel sessions related HVDC at this conference.
- Planning panel for T&D meeting on HVDC transmission.
- Possibly a second panel on FACTS
- Little progress on creating IEEE E-learning tutorials due to changes in organization and process.

5.4 WG 15.05.15 Use of Power Electronics in Major Grids for Wind Generation Projects

- 22 attendees
- Objective of the working group is to facilitate anticipated 2020 North American Grid, and disseminate information
- Shooting for a panel for GM14
- Panel title likely to be: Interconnection and Operating Challenges Interfacing Power Electronics. With the presentations along the lines of:
 - Renewables connected to weak power systems
 - Modeling of wind gen controllers
 - Operating issues, inertial response
 - Solar farms
 - New projects
 - Use of DC and how DC is operated/dispatched

5.5 WG 15.05.17 on HVDC and FACTS Bibliography

- Published 2 new papers, HVDC bibliography and FACTS bibliography
 - Noted that 55% of published papers on FACTS during the time frame of the bibliography paper were not on listed on IEEEExplore.
 - Noted that 35% of published papers on HVDC during the time frame of the bibliography paper were not on listed on IEEEExplore.
- Revisiting time period per paper (July-June rather than January-December)
- Added a new bibliography on renewable generation combined with FACTS
- Will provide bibliography documents or IEEEExplore links for subcommittee web page.
- Requested donations to pay students to work on bibliography, needs \$10,000 per year. Non-profit in Canada. Mark Reynolds will look in applicability for US companies.

6 WEBSITE UPDATE

- Brian gave an update, main web page up to date. WG web pages need to provide information for content

7 AWARD COMMITTEE UPDATES

7.1 Uno Lamm Award

- Dennis Woodford gave an update. Requested nominations for next year. November 30th deadline.

- Question from floor about whether IEEE/PES membership is a prerequisite for a nominee. Not a prerequisite with official nominations.
- Information and nomination instructions at:
<http://www.ieee-pes.org/uno-lamm-high-voltage-direct-current-award>

7.2 Nari Hingorani Award

No report.

7.3 Nari Hingorani Custom Power Award

No report.

8 SUBSTATIONS SUBCOMMITTEE

- a) Subcommittee I0: working groups I4, WG I5, and WG I8, WG I9

Hubert Bilodeau I0 chair reported

- (1) WG I4: Dan Sullivan reported

(a) Met Wednesday morning

(b) Maintaining users list and updating

(i) Extacting VSC installations and I5 will start to maintain that list

(c) Doing a reliability survey 8-9 years, report that distribute to users. Reported 750 incidents on about 100 installations. Next survey in late Sept. Looking for panel session next GM

(d) E-learning modules from their tutorial. Ran into change in definition for modules, will wait and see how goes with HVDC and FACTS educations

(e) Panel session for T&D (I0 and DC&FACTS) on power electronic installations.

(f) SVC tutorial for GM 2015

(g) Question from Dennis. CIGRE does a reliability report on HVDC and reports every 2 years. Can the SVC report be published periodically. WG I4 would like to resolve all the ones with cause "other".

- (2) WG I8 (PEBB): Herb Ginn is now chair, 2 TFs

(a) Randy Wachal reported for Ani Gole, chair for TF 2. PAR on document for guide for PEBB study tools. Shooting for Dec 31, review and publish

(b) No report on TF1 or WG

- (3) WG I5 (VSC): Ben Mehraban (Hubert reported for them)

(a) Tutorial again at GM 14, add some material with newer applications and converters, drop some old material

(b) Writing a functional spec on STATCOM. Template based on I4 document on SVC (different on harmonics and losses)

(c) Handbook on VSC Application for transmission (Geza and George). Build from guide document. Approaching a publisher (Wiley)

- (4) I9 from SVC, joint with PSRC on protection, Hubert reported
 - (a) Now have a PAR, approved in December, for a Guide (not a specification)
 - (b) Have had several meetings
 - (c) Looking at existing standards which will overlap.

9 LIAISON REPORTS

1) Overhead Lines - HVDC Line Design Guide Task Force

- Ram Adapa reported.
- There will be a task force meeting Thursday afternoon.
- They are working on guide document., with a preliminary draft last summer

2) CIGRE B4

- Dennis Woodford reported.
 - 6 WG's specifically geared toward DC grids
 - Members of those groups here. Making progress on Brochures
 - Models for VSC
 - DC Grid power flow
 - Protection
 - Grid Code
 - New one: commissioning VSC-Based HVDC
 - Recommended DC voltages for DC grid
 - Impact of ac system characteristics on dc grid
 - Meeting in Brazil in Fall 2013. Coordinating the brochures to minimize overlap
 - B4.62 met in Austin, wind farms interconnections to weak AC systems
 - Mark Reynolds—good progress on ground electrode design guide. A lot of old information not available electronically has been uncovered. Liaison with US National Association of Corrosion Engineers to get comment and support. Show examples of successful installations. B4.61
 - Dragan Jovic: first brochure 447 is now published.
 - Reigh Walling: B4.47 wrapped up, addendum to ac filter design brochure. Should be released

10 DISCUSSION OF CURRENT STATUS OF WORKING GROUPS AND POTENTIAL CREATION OF NEW ONES.

- Request for proposals for new WGs. Some of the current groups have been around a long time. Same people doing most of the hard work.
- Opportunity to start new WG's, either in place of or instead of existing ones.
- Request proposals for WG's. Formal request sent to Ben, Andrew and Brian.
 - A few initial ideas:
 - HVDC impact on ac systems

- VSC topologies
- Power electronic device performance in weak ac systems
- Offshore wind applications for HVDC and FACTS
- Multiterminal VSC HVDC (small and large systems, not just European supergrid)
- Evaluation of existing HVDC standards (find holes and plug them)
- Comments from the floor
 - Bill Long: look at what B4 is doing and find and communicate gaps to their chair. Not duplicate their efforts. Follow up also relate some of the outcomes of CIGRE's brochures to different applications in North America.
 - Mark Reynolds: Reintroduction of synchronous condensers. Market has resurged after VELCO. Incredibly weak systems may need rotating inertia. Many countries investing in reliable, maintainable, efficient 25 MVA machines, can be used for Synch Cond. Controllability issues, holes in specs. Why can't we use doubly-fed machines with power electronic control
 - Working group on transients brought up question about interactions between cables and converters. Should that be here or general systems. Albert Keri added general systems fast transient modeling (up to 1-2 ms) for FACTS, HVDC converters. Overvoltages on that time scale. New TF under digital simulation of transients.
 - Find appropriate groups and then find people who want to lead the groups. If you are interested in leading a working group, talk to us. If you know of someone bring them in. CIGRE pushing young engineers and students.
 - Dennis Woodford suggested he and Willis Long review what is happening in CIGRE B4 and then report back. Andrew suggested some others who could help, and they should follow with the subcommittee.

11 PRESENTATIONS

- a) Mackinac VSC-HVDC flow control project and control design (presented by Michael Marz)
- b) Atlantic Wind Connection (presented by Kenneth Epp)

Copies of the presentations are provided on the Subcommittee website.

12 GENERAL REPORTS ON HVDC AND FACTS PROJECTS/DEVELOPMENTS

The members and guests were provided with an opportunity to provide updates on HVDC and FACTS projects that they were presently working on.

13 LOCATION OF THE NEXT MEETING

- Very few will be able to attend the PES Joint Technical Committee Meeting in January, so the subcommittee and working groups will not meet there.
- The next subcommittee meeting will be at the PESGM 2014

14 ADJOURNMENT

The IEEE PES HVDC & FACTS Subcommittee Meeting Adjourned at approximately 15:45

Minutes recorded and respectfully submitted by Brian Johnson, University of Idaho.

APPENDIX A: LIST OF ATTENDEES

| First Name | Last Name | Company | E-mail Address |
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| Ram | Adapa | EPRI | radapa@epri.com |
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