

IEEE PES HVDC & FACTS SUBCOMMITTEE MEETING

2012 IEEE PES Summer Meeting

Approved Minutes of Meeting

25 July 2012

San Diego, California

**IEEE HVDC AND FACTS SUBCOMMITTEE
2012 MEETING
14:00 - 17:00 on Wednesday, July 25, 2012
San Diego, California**

1 WELCOME AND ANNOUNCEMENTS

Robyn Koropatnick called the meeting to order at 14:20 and welcomed everyone to the meeting.

1.1 Executive Subcommittee Changes

Robyn introduced the new executive subcommittee members:

- Ben Mehraban, Chair
- Andrew Isaacs, Vice-Chair
- Brian Johnson, Secretary

Robyn turned meeting over to Ben Mehraban

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.

3 APPROVAL OF THE JULY 2012 MEETING AGENDA

Ben went over the July 2012 meeting agenda, which had been distributed to the members and guests of the HVDC & FACTS Subcommittee who provided their e-mail addresses at prior meetings. The agenda was approved as issued.

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

Robyn went over the minutes and the minutes were approved.

5 WORKING GROUP REPORTS

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

Ram Adapa provided a report for this working group.

1. Ram went over working group objectives and scope
2. Four position papers targeted on EMT models
 - a. EMT models conventional HVDC (draft)
 - b. EMT models for facts, non-VSC (published, present to subcommittee)
 - c. EMT models for VSC based FACTS
 - d. EMT models for VSC HVDC (need to update to reflect new directions)
3. Benchmark test systems
 - a. Small system (12 buses)
 - b. Large one (107 based on WECC reduced order)
4. Simulation studies and models using the 12 bus test system
 - a. Add FACTS devices
 - b. Some studies are done, STATCOM, SVC, TCSC, UPFC, more work needs to be done
 - c. Load flow, voltage stability, small signal stability, dynamic stability
 - d. Question from floor about data from test system for a panel on reliability of HVDC
5. Four technical presentations at working group meeting
 - a. Hybrid EMT and transient stability (from Electronix)

- b. TCSC models and application of 12 bus system (Brian Johnson)
 - c. VSC HVDC for renewable
 - d. Presentation on modeling (Ani Gole)
6. 20 people attended

5.2 WG 15.05.08 - HVDC and FACTS Economics and Operating Strategies

1. The working group met, 29 people attended
2. Held a panel session Everything Old is New Again! Refurbishment of HVDC and FACTS at GM 2012
 - a. Refurbishment Strategies for HVDC Projects
 - b. Life Extension Investigation of AEP's Oklaunion Converter Station
 - c. New Synchronous Condensers for Jeju Island
3. Looked at plans for next year
 - a. Panel session for 2013 general meeting
 - b. Will continue along the lines of current activities

5.3 WG 15.05.14 Education on HVDC and FACTS

The working group met in a joint session with the working group on HVDC and FACTS Bibliography. The working group met on Wednesday, July 25, 2012, with 29 in attendance. The working group organized a panel session "High Voltage Direct Current Power Transmission" at the 2012 IEEE Transmission and Distribution Conference and Exposition in Orlando. Approximately 100 people attended the panel session and the feedback was positive. The following presentations were given.

- a. Bill Long: Fundamental Concepts in HVDC Power Transmission
- b. Mike Bahrman: HVDC Technology: Line Commutated Converters
- c. Neil Kirby: HVDC Technology: Voltage Source Converters
- d. Wayne Litzenberger: HVDC Project Implementation

The working group is considering putting on a panel session on HVDC transmission at the 2013 General Meeting since there isn't a PSCE in 2013. The content will be changed a bit to reflect the different audience at the GM. The working group is also planning to make two IEEE E-Learning Tutorials based introductory material from past panels that can be used at PES Chapter meetings.

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

Gez Joos gave a report. Six people attended the meeting, which conflicted with the HVDC and FACTS economics working group meeting. The working group members are hoping to do a panel at next GM on interconnecting large wind farms to large grids. Several presentation options are already lined up.

5.5 WG 15.05.17 on HVDC and FACTS Bibliography

Rajiv Varma reported on the working group activities. The HVDC and FACTS bibliography working group presented 4 bibliography papers (3 FACTS, 1 HVDC) at the 2012 GM. The working group members have now caught up on bibliographies for 1998-2011. In addition they added a new 10 year bibliography on implementation of FACTS with renewable generation.

6 WEBSITE UPDATE

Brian Johnson reported that the web page is overdue for an update. He will be making an update soon. He requires information from the Working Group chairs regarding what should be published. Presentations are posted in locked PDF format.

7 AWARD COMMITTEE UPDATES

7.1 Uno Lamm Award

Bjarne Andersen received award at the 2012 GM Awards Dinner. Dennis Woodford, Chair of the Committee, requested nominations for next year's award. Nominees should be people who have contributed significantly to the technology. Nominees who aren't selected stay on the list.

Nominations due by end of 2012

7.2 Nari Hingorani Award

Stig Nilsson received the 2012 Nari Hingorani FACTS award.

7.3 Nari Hingorani Custom Power Award

Hirofumi Akagi received the 2012 Nari Hingorani Custom Power award.

7.4 CIGRE: USNC

1. Willis Long and Stig Philip Sporn Award for contributions to USNC
2. John Paserba Atwood Associates Award
3. Distinguished working group volunteers

7.5 New IEEE Fellows who are active with the DC and FACTS Subcommittee

1. Aty Edris
2. Ram Adapa

8 HVDC PROJECTS LISTING

Robyn Koropatnick discussed the projects listing. The most recent update was completed in March 2012. It is getting difficult to maintain listing with the increased frequency of new project.

The HVDC Projects Listing includes two worksheets: one for existing projects and one for planned projects.

- Robyn asked for guidance on how to best represent replacement/refurbishment projects
- Planned projects have the most changes. Include projects that have been announced. Let Robyn of modifications
- The Wikipedia entry for HVDC projects has the IEEE list data, but is not maintained by this group

Dennis Woodford moved that the subcommittee members thank Robyn for her efforts. Motion was approved and acted on.

9 SUBSTATIONS SUBCOMMITTEE

Hubert Bilodeau presented the following summary of Subcommittee I0 activities. Subcommittee I0: High voltage power electronics substations met last May

1. Change in leadership, Chris Horwill is retiring. New officers: Chair Daniel Sullivan (Mitsubishi), Secretary Joe Warnik (ABB)
2. Working Group I4: SVC
 - a. Gave SVC tutorial, 32 attended. Heinz Tyll passed away prior to tutorial, so committee did a revision.
 - b. Making arrangements to do a set of IEEE E-learning modules from the course. Working on the first module from the course. Signing a contract and plan to learn by experience. Plan to do more
 - c. I4 SVC users list through 2011 on subcommittee web site

- d. Reliability survey of SVC's—poor response in 2010. Will go back to increase sample size with selected users.
3. Working group I5 VSC
 - a. Submitted a PAR for functional specification of STATCOM systems (Ben Mehraban is a chair).
 - b. Developing a users list similar to the SVC list. They will use a template with different sheets for different applications (any VSC application-STATCOM, SMES, etc). Extracting data from VSC projects that are listed SVC list.
 - c. Discussed writing a book. Discussing contact and approach. Follow up of initial VSC application guide.
4. Working Group I8 (PEBB)
 - a. N. Hingorani presented. Reviewed purpose
 - b. One TF finished document on control/protection architecture. Published document and held a tutorial
 - c. TF now revising document on PEBB concepts
 - d. TF writing a guide for tools for design of PEBB and systems
 - i. Subcommittee making a template for describing the tools
5. Working Group I9 (new group)
 - a. Modern protection for SVC
 - b. PAR: Changed title to remove emphasis on modern.
 - c. Liaison with PSRC.

10 LIAISON REPORTS

10.1 Overhead lines committee

Ram Adapa provided a brief report. The committee is looking at a few HVDC project reports. They would like a converter report

10.2 CIGRE B4

Stig Nilsson, secretary of study committee B4 provided a report.

1. Major emphasis is on dc grid. What it would take to have a dc grid to cover all Europe and down to North Africa. Probably technically feasible. Need fast, reliable, cheap breakers.
 - a. 5 working groups have been formed to study elements of the dc grid
2. Published a couple reports.
 - a. Fields from DC lines (estimate, measure and evaluate),
 - b. Environmental aspects of dc.
 - c. Performance of TCSC systems around work. There are 15 including Slatt (Kayenta is now a fixed capacitor).
3. Paris meeting in August
4. B4 held a joint colloquium in San Francisco (emphasis on cables and VSC). Estimated 125 or so attended (just shy of upper limit). Tour of Trans Bay cable.

11 PRESENTATIONS

Two presentations were provided during the July 2012 meeting:

1. Alstom HVDC projects and technology, Neil Kirby
2. ABB Development in HVDC and FACTS grids, Magnus Callavik

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

The next IEEE PES HVDC & FACTS Subcommittee Meeting will tentatively be held at the IEEE PES Winter Technical Meeting in Memphis Tennessee in January 2013. The Subcommittee will definitely meet at the IEEE PES General Meeting in Vancouver BC in July 2013.

14 ADJOURNMENT

The IEEE PES HVDC & FACTS Subcommittee Meeting Adjourned at approximately 14:00

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

APPENDIX A: LIST OF ATTENDEES

Name	Affiliation	E-mail Address
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