

IEEE PES HVDC & FACTS SUBCOMMITTEE MEETING

2010 IEEE PES Summer Meeting

Minutes of Meeting

DRAFT

28 July 2010, Minneapolis

IEEE PES HVDC AND FACTS SUBCOMMITTEE
2010 SUMMER MEETING
TABLE OF CONTENTS

	Page
1 MEETING INFORMATION	1
2 WELCOME AND ANNOUNCEMENTS	1
2.1 Executive Committee Changes	1
2.2 Acknowledgements.....	1
3 APPROVAL OF THE JULY 2010 MEETING AGENDA.....	1
4 INTRODUCTIONS.....	1
5 MEETING MINUTES – CALGARY, JULY 27, 2009.....	2
6 WORKING GROUP REPORTS.....	2
6.1 WG 15.05.02 - Dynamic Performance and Modelling of HVDC Systems and Power Electronics for Transmission Systems	2
6.2 WG 15.05.08 - HVDC and FACTS Economics and Operating Strategies	2
6.3 WG 15.05.14 Education on HVDC and FACTS	3
6.4 WG 15.05.15 Use of Power Electronics in Major Grids for Wind Generation Projects	3
6.5 WG 15.05.17 on HVDC and FACTS Bibliography	4
7 SUBCOMMITTEE GENERAL BUSINESS	4
7.1 HVDC and FACTS Subcommittee Website Update	4
8 AWARD COMMITTEE UPDATES	4
8.1 Uno Lamm Award	4
8.2 Nari Hingorani Award	4
9 HVDC PROJECTS LISTING	5
10 SUBSTATIONS SUBCOMMITTEE.....	5
11 LIAISON REPORTS.....	5
12 PRESENTATIONS	6
13 GENERAL REPORTS ON HVDC AND FACTS PROJECTS/DEVELOPMENTS	6
14 LOCATION OF THE NEXT MEETING	6
15 ADJOURNMENT	6

List of Appendices

Appendix A List of Attendees

**IEEE HVDC AND FACTS SUBCOMMITTEE
2010 MEETING**

1 MEETING INFORMATION

Time: 13:30 - 17:00 on Wednesday, July 28, 2009
Location: Minneapolis Convention Center

2 WELCOME AND ANNOUNCEMENTS

Robyn Page welcomed everyone to the meeting.

2.1 Executive Committee Changes

Robyn thanked Ben for all of his hard work for the subcommittee, and thanked him for his continued involvement as Vice Chair of the Subcommittee. The attendees acknowledged his contributions. Robyn introduced the subcommittee members:

Ben Mehraban, Vice Chair
Andrew Isaacs, Secretary

2.2 Acknowledgements

Recognition was made of the following awards granted to HVDC & FACTS Subcommittee members at the 2010 PES meeting:

Ani Gole was granted an IEEE fellowship
Mohammed Rashwan was granted the Uno Lamm Award for 2010
Chris Horwill was granted the Nari Hingorani FACTS award for 2010

3 APPROVAL OF THE JULY 2010 MEETING AGENDA

The July 2010 agenda was 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 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.

5 MEETING MINUTES – CALGARY, JULY 27, 2009

The minutes from the July 27, 2009 IEEE PES Summer Meeting were disbursed to members and guests via e-mail prior to the July 28, 2010 meeting. The minutes were also posted on the IEEE PES HVDC & FACTS Subcommittee website.

Ben Mehraban reviewed the 2009 meeting minutes. Ram Adapa moved to approve the minutes, the motion was seconded by Gene Wolf. The July 27, 2009 minutes were approved as written.

6 WORKING GROUP REPORTS

6.1 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.

The working group met at the Minneapolis meeting, with over 26 attendees.

The working group is currently producing position papers for models which may be submitted as an IEEE paper.

- Paper #1: An outline was developed for position paper for EMT type models for LCC HVDC.
- Paper #2: EMT type modes for FACTS (not including HVDC, and not including VSC). This paper was published and is finished.
- Paper #3: EMT type models for VSC type FACTS. A draft report is finished and will be available at the next meeting
- Paper #4: EMT type models for VSC based FACTS. A draft report is finished and will be available upon request.
- Paper #5: Wind integration position paper is on hold until the 4th position paper is finished.

Benchmark test systems is another main activity. A 12 bus system has been developed, headed by Ani Gole. Further work includes adding SVC, STATCOM, and TCSC to test system. The test system will be available on the Subcommittee website at a future time.

David Jacobson made a comment asking if work is being done on transient stability analysis. Ram advised that they were, although a position paper may not be developed for this. It would be included in the 12 bus test system.

David Jacobson said that a generic SVC model was made by Pouyan Pourbeik, and mentioned that generic models for wind farms would be under development by wind working groups (also Pouyan Pourbeik).

6.2 WG 15.05.08 - HVDC and FACTS Economics and Operating Strategies

Ben Mehraban provided a report for this working group as Mark Reynolds was absent, and had indicated his intention to resign as chairman of this working group due to work commitments. This working group will need a new chairman.

Mike Henderson has agreed to be the chair into the future of this working group. 10 people were in attendance at the working group meeting. Next year the group will produce a panel session. Possible panel session topic ideas included: “Economics of HVDC and FACTS”, “Installation and Performance of 800kV DC projects”, “A Comparison of Performance Between Various Reactive Power Devices”, and “Control Strategies and Operational Strategies of Multi-terminal HVDC”. Collaboration between this working group and the wind working group was encouraged to produce a panel for next year.

6.3 WG 15.05.14 Education on HVDC and FACTS

Chair Brian Johnson provided a report for this working group. It was noted that future meetings would be combined with the bibliography working group as two one hour meetings in sequence at the same location.

A panel session was held in Seattle on network solutions and FACTS that addressed the following:

1. Overview
2. Study tools
3. Case studies from a planner’s point of view

The working group is also preparing presentations that could be used for local PES meetings.

A panel session was presented at the 2010 Minneapolis meeting, introducing FACTS, with 40 people in attendance. A further panel session is planned for Phoenix for dynamic reactive power compensation.

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

Geza Joos provided a report for the wind generation working group. The working group has a draft report that is being circulated internally for initial comment. The Table of Contents of the draft document is as follows:

1. Introduction
2. Future Electric Grids
3. General Approaches and Constraints
4. Alternate Energy Generation
5. Equipment Characteristics and System Operation
6. System Performance and Operation – System Studies
7. Integration and Protection Requirements
8. Impact on System Security and Other Impacts
9. Characterizing Equipment Performance
10. Installation Considerations
11. Economics
12. Case Studies
13. Bibliography

Working group report: Much of the initial scope of the working group report has been covered in other groups in IEEE and CIGRE. A decision going forward is to produce a report in consultation with these other groups, and a panel session planned for Detroit. The working group will be meeting again in Detroit.

6.5 WG 15.05.17 on HVDC and FACTS Bibliography

Rajiv Varma chaired a meeting for this working group and presented 10 bibliography papers, which are available in the 2010 conference proceedings. The scope for this working group is to prepare bibliographies on HVDC and FACTS for 1998 – 1999, and 2006 – present. This task is now complete, and a new website will be available. (Task assigned to Brian Johnson.)

The work has been performed by graduate students at University of Western Ontario, London, Ontario, Canada. The working group needs nominal funding to support the students to continue the work. Rajiv requested funds for the grad students working on this task.

The working group believes that a listing of FACTS projects is needed.

A Compilation of annual bibliographic papers will be published as conference papers in subsequent IEEE General Meetings.

Annual Bibliographies will be made available on IEEE T&D website.

7 SUBCOMMITTEE GENERAL BUSINESS

7.1 HVDC and FACTS Subcommittee Website Update

Brian Johnson provided a summary of the website activity. It was noted that the content needs to be updated. All information posted is provided in locked PDF format.

8 AWARD COMMITTEE UPDATES

8.1 Uno Lamm Award

Mohammed Rashwan received the 2010 Uno Lamm award.

Nominations from the group are needed for the Uno Lamm award. Information on the award and nomination forms is available on the IEEE PES awards website.

8.2 Nari Hingorani Award

Chris Horwill received the 2010 Nari Hingorani FACTS award.

Nominations from the group are also needed for the Nari Hingorani award. Information on the award and nomination forms is available on the IEEE PES awards website.

9 HVDC PROJECTS LISTING

Robyn Page provided paper copies of the July 2010 version of the HVDC Projects Listing to the Subcommittee members and guests. The July 2009 HVDC Projects Listing is also available from the IEEE PES HVDC & FACTS Subcommittee website.

Corrections, modifications or updates should be forwarded to Robyn.

The IEEE PES HVDC Projects Listing has been updated through:

- information received from members and guests of the HVDC & FACTS Subcommittee
- press releases
- internet searches
- conference presentations

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

10 SUBSTATIONS SUBCOMMITTEE

Chris Horwell provided a summary of the Substations Subcommittee IO activities.

Chair: Chris Horwill, chris.horwill@areva-td.com
Vice Chair: Hubert Bilodeau, bilodeau.hubert@hydro.qc.ca
Secretary: Dan Sullivan, dan.sullivan@meppi.com

Working Groups and Task Forces

WG I1 – Power Electronic Equipment – Chair: Dr. George Karady

WG I2 – Thyristor Controlled Series Capacitors – Chair: Dr. George Karady

WG I4 – Static Var Compensators – Chair: Hubert Bilodeau

- TF1 revising standard 1031-2000 (Guide for SVC Functional Specification) – Chair: Heinz Tyll
- TF2 revising standard 1303-2000 (Guide for SVC Field Tests) – Chair: Chris Horwill

WG I5 – Voltage Sourced Converters – Chair: Ben Mehraban

WG I8 – Power Electronic Building Blocks – Chair: Narain Hingorani

- TF1 working on standard P1676 (Guide for Control Architecture for HV Pwr Elec Eqpt)

Standards

Std 857-1996 *IEEE Recommended Practice Test Procedures for HVDC Thyristor Valves* - Withdrawn in January 2010

Std 1240-2006 *IEEE Guide for the Evaluation of Reliability of HVDC Converter Stations* - Reaffirmed in 2006

Std 1378-2008 *IEEE Guide for Commissioning HVDC Converter Station and Associated Transmission Systems* – Reaffirmed in 2008

11 LIAISON REPORTS

The following liaison reports were provided at the meeting by Karl Mortenson:

- IEEE 1204-1997
- IEEE 1124-2003

12 PRESENTATIONS

Two presentations were provided during the July 2010 meeting:

1. “Strategic Midwest Area Renewable Transmission Study”, presented by Mr. Manny Rahman (AEP). Report is available at www.smartstudy.biz.
2. “Latest Technology Development/Projects”, presented by Mr. Dietmar Retzmann (Siemens)

A third, informal, presentation was made on geomagnetic storms, and the consequences and mitigations of much larger storms which have been recently identified.

Copies of the presentations are provided on the Subcommittee website.

13 GENERAL REPORTS ON HVDC AND FACTS PROJECTS/DEVELOPMENTS

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

14 LOCATION OF THE NEXT MEETING

The next IEEE PES HVDC & FACTS Subcommittee Meeting will be held at the IEEE PES General Meeting in Detroit, Michigan on July 27, 2010.

15 ADJOURNMENT

The IEEE PES HVDC & FACTS Subcommittee Meeting adjourned at 17:00 PM.

Minutes developed and respectfully submitted by Andrew Isaacs, Electranix Corporation.

**APPENDIX A
LIST OF ATTENDEES**

No.	Name	Company	E-mail Address	Member	Guest
1	Robyn Page	Teshmont	rpage@teshmont.com	X	
2	Ben Mehraban	AEP	bmehraban@aep.com	X	
3	Andrew Isaacs	Electranix	ai@electranix.com	X	
4	Gene Wolf	Lone Wolf Engineering	gw_engr@msn.com	X	
5	Paul Marken	GE Energy	paul.marken@ge.com	X	
6	Ram Adapa	EPRI	radapa@epri.com	X	
7	Craig Muller	Manitoba Hydro International	cmuller@hvdc.ca		X
8	Paul Wilson	Manitoba Hydro International	plwilson@hvdc.ca	X	
9	Brian Johnson	University of Idaho	b.k.johnson@ieee.org	X	
10	Murray Bennett	Teshmont	mbennett@teshmont.com		X
11	Per Lindberg	ABB	per.e.lindberg@se.abb.com	X	
12	Geza Joos	McGill University	geza.joos@mcgill.ca	X	
13	Manzar Rahman	AEP	mearah01@gmail.com	X	
14	Mark Mihalchuk	Teshmont	mmihalchuk@teshmont.com		X
15	Karl Mortensen	Consultant	kmortens@charter.net	X	
16	Gabriela Hug	Carnegie Mellon University	ghug@ece.cmu.edu		X
17	Vajira Pathirana	Teshmont	vpathirana@teshmont.com	X	
18	Jake Wiebe	Electranix	jkw@electranix.com		X
19	Bathiya Jayasekara	Transgrid Solutions	bjayasekara@transgrid solutions.com		X
20	Anuradha Dissauayala	Electranix	ad@electranix.com		X
21	Babak Badizadeh	Vestas Technology R&D	babad@vestas.com		X
22	Norman MacLeod	Alstom	norman.macleod@areva_td.com		X
23	John Roach	Hartford Steam Boiler	john_roach@hsb.com		X
24	Wes Kwasnicki	AltaLink	wes.kwasnicki@altalink.ca	X	
25	Bill Long	University of Wisconsin	willis@engr.wisc.edu	X	
26	Randy Wachal	Manitoba HVDC RC	rww@hvdc.ca	X	
27	Ani Gole	University of Manitoba	gole@ee.umanitoba.ca	X	
28	David Jacobson	Manitoba Hydro	dajacobson@hydro.mb.ca		X
29	Mohamed Rashwan	Transgrid Solutions	mrashwan@transgridsolutions.com		X

No.	Name	Company	E-mail Address	Member	Guest
30	Nari Hingorani	Consultant	nghingorani@sbcglobal.net	X	
31	Doetmar Retzmann	Siemens	dietmar.retzmann@siemens.com		X
32	Jim Roedel	GE Energy	jim.roedel@ge.com	X	
33	Rajiv Varma	University of Western Ontario	rkvarma@uwo.ca	X	
34	Dragan Jovcic	University of Aberdeen	d.jovcic@abdn.ac.uk	X	
35	John Kappenman	Storm Analysis Consultants	jkappenma@aol.com		X
36	Curtis Birnbach	Advanced Fusion Systems	cbirnbach@advfusion.com		X
37	Hubert Bilodeau	Hydro Quebec	bilodeau.hubert@hydro.qc.ca	X	
38	Jean Belanger	Opal-RT	jean.belanger@opal-rt.com		X
39	Gerard Moreau	Hydro Quebec	moreau.gerard@hydro.qc.ca		X
40	Michael Marz	American Transmission Company	mmarz@atllc.com		X
41	Dirk Westermann	Ilmenau University of Technology	dirk.westermann@tu-ilmenau.de		X
42	Mansour Pourcyrons	Pike Energy Solutions	mpourcyrons@pike.com	X	
43	Chris Horwell	Alstom Grid	chris.horwell@areva_td.com	X	