

**IEEE PES HVDC & FACTS SUBCOMMITTEE MEETING**

**2008 IEEE PES Summer Meeting**

**Minutes of Meeting**

**23 July 2008, Pittsburgh**

IEEE PES HVDC AND FACTS SUBCOMMITTEE  
2008 SUMMER MEETING

TABLE OF CONTENTS

	Page
1 MEETING INFORMATION .....	1
2 WELCOME AND ANNOUNCEMENTS .....	1
3 INTRODUCTIONS .....	1
4 MEETING MINUTES .....	1
4.1 June 27, 2007 .....	1
5 SUB-COMMITTEE GENERAL BUSINESS .....	2
5.1 HVDC and FACTS Sub-Committee Website Update .....	2
5.2 Status of WG 15.05.13 Transmission System Application Requirements for FACTS Controllers Document .....	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 .....	3
7 AWARD COMMITTEE UPDATES .....	4
7.1 Uno Lamm Award .....	4
7.2 Nari Hingorani Award .....	4
8 HVDC PROJECTS LISTING .....	4
9 SUBSTATIONS SUBCOMMITTEE .....	5
10 LIAISON REPORTS .....	5
11 PRESENTATIONS .....	5
12 ADJOURNMENT .....	6

**List of Appendices**

Appendix A	List of Attendees
Appendix B	HVDC Projects List ( <i>appended as an Excel document</i> )
Appendix C	Presentations

**IEEE HVDC AND FACTS SUBCOMMITTEE  
2008 MEETING**

**1 MEETING INFORMATION**

Time: 13:30PM-17:00PM, Wednesday July 23, 2007  
Location: 2008 IEEE-PES General Meeting  
Pittsburgh, Pennsylvania, USA

**2 WELCOME AND ANNOUNCEMENTS**

Ben Mehraban, Chair, welcomed everyone to the meeting, and made the following acknowledgements:

- Willis (Bill) Long received the 2008 Uno Lamm award
- Dojo Chan received the 2008 Nari Hingorani FACTS award
- Rick DeDoncker received the Nari Hingorani Custom Power award
- Gene Wolfe was named as an Fellow of IEEE
- Wayne Lichtenberger was named as an Fellow of IEEE

**3 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.

**4 MEETING MINUTES**

**4.1 June 27, 2007**

The minutes from the June 27, 2007 IEEE PES Summer Meeting were disbursed to members and guests via e-mail on May 31, 2008. The minutes are also available on the IEEE PES HVDC & FACTS Subcommittee website.

The June 27, 2007 minutes were approved with the following amendments:

- The corporate logo was removed from all pages except the title page.

## **5 SUB-COMMITTEE GENERAL BUSINESS**

### **5.1 HVDC and FACTS Sub-Committee Website Update**

Brian Johnson provided a summary of the website activity. It was noted that the content needs to be updated. There are folders on the website for Working Group scope documents, past minutes and past presentations. All information posted is provided in locked PDF format.

### **5.2 Status of WG 15.05.13 Transmission System Application Requirements for FACTS Controllers Document**

The above WG report was published and the work is complete.

Dennis Woodford moved, seconded by Gene Wolfe that the Working Group be disbanded. The motion passed.

## **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. This WG is working on the following documents:

1. EMTP-type Models for Conventional DC Systems
2. EMTP-type Models for FACTS excluding VSC
3. EMTP-type Models for VSC based FACTS
4. EMTP-type Models for VSC based DC Transmission
5. Wind generation models for inclusion in Power Networks
6. Benchmark Test Systems to validate HVDC and FACTS
7. Developing a fact sheet on existing FACTS installations around the world

### **6.2 WG 15.05.08 - HVDC and FACTS Economics and Operating Strategies**

Mark Reynolds was absent but has indicated his intention to resign as chairman of this working group due to work commitments. This working group will need a new chairman.

Ram Adapa asked whether the scope of the working group should be increased to include:

1. Cost-benefit analysis of ac versus dc covering system security and emergency overload rating.
2. Performance analysis of various technical solutions including availability and reliability

The working group chairs were requested to propose a new name for this working group.

### **6.3 WG 15.05.14 Education on HVDC and FACTS**

Brian Johnson provided the following report. Future meetings will be combined with the bibliography working group, two one hour meetings in sequence at the same location. The group is working on three presentations:

1. HVDC overview
2. 800 kV HVDC
3. History of the Pacific Intertie

There is a panel session planned in Seattle on network solutions and FACTS that will address 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.

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

Geza Joos provided the following report. The name of the working group has been revised. 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

### **6.5 WG 15.05.17 on HVDC and FACTS Bibliography**

Rajiv Varma chaired a meeting for this working group. The scope for this working group is to:

1. prepare annual bibliographies on HVDC and FACTS effective 2004.
2. prepare historic bibliographies covering 1998-2003

The objectives have been achieved for the HVDC portion. Continuing work is as follows:

1. FACTS Bibliographies for 2006 - 2007

2. FACTS Bibliographies for 1998 to 2000
3. prepare current bibliographies for 2007-08 on HVDC and FACTS

The work is carried out by students at University of Western Ontario, London, Ontario, Canada. The working group needs nominal funding to support the students to continue the work.

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

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 AWARD COMMITTEE UPDATES**

### **7.1 Uno Lamm Award**

David Fletcher, Chair of the Uno Lamm award committee was unable to attend this meeting. Dennis Woodward noted that nominations from the group are needed, and that the deadline for the 2009 award is November 2008. Information on the award and nomination forms is available on the IEEE PES awards website.

### **7.2 Nari Hingorani 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.

## **8 HVDC PROJECTS LISTING**

Robyn Taylor provided electronic copies of the June 2008 version of the HVDC Projects Listing to the Subcommittee members and guests via e-mail on July 14, 2008. The June 2008 HVDC Projects Listing is also available from the IEEE PES HVDC & FACTS Subcommittee website.

There appear to be a number of new HVDC projects as well as a number of life extension and upgrade projects occurring around the world.

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.

Further modifications to the list are required, so please send modifications and updates to be sent to Robyn Taylor.

The HVDC Projects Listing is provided in Appendix B (Excel spreadsheet).

## **9 SUBSTATIONS SUBCOMMITTEE**

George Karady presented a summary of Subcommittee IO activities.

IEEE Std 857 was reaffirmed in 2004, future review of this standard will have to wait until 2009. Feedback from members recommended to not abolish the standard in favour of IEC 60700. The main differences between the standards are the requirement for a wet test and the number of test impulse shots (five versus three). The two standards were discussed but the general consensus was to continue to reaffirm 857.

Std 1585-2002 IEEE Guide for the Functional Specification of Medium Voltage (1- 35kV) Electronic Series Devices for Compensation of Voltage Fluctuations was reaffirmed in 2007.

Minutes of the High Voltage Power Electronics Stations Subcommittee (IO) can be obtained from Hubert Bilodeau.

## **10 LIAISON REPORTS**

The following liaison reports were provided at the meeting:

- IEEE Standards Association (SA)
- CIGRE Liaison
- T&D Committee

## **11 PRESENTATIONS**

Three presentations (four speakers) were provided during the July 2008 meeting:

1. John Paserba – "Summary of the T&D FACTS Panel Session"
2. Yuri Kazachkov – "TransBay Cable HVDC Project"
3. Status of EPRI's HVDC and FACTS R&D Activities
  - Ram Adapa – "HVDC Updates"
  - Aty Edris – "The Use of VSC Based BtB as a Grid Shock Absorber"

PowerPoint slides of the presentations are provided in Appendix C.

## **12 ADJOURNMENT**

The next meeting will held at the IEEE PES General Meeting in Calgary, Alberta in July 2009.

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

Minutes developed and submitted by Murray G. Bennett and Robyn L. Taylor, Teshmont Consultants LP.



**APPENDIX A**  
**LIST OF ATTENDEES**

**IEEE HVDC & FACTS Subcommittee Meeting  
Attendees**

No.	Name	Affiliation	E-mail Address	Member	Guest
01	Murray Bennett	Teshmont Consultants	mbennett@teshmont.com		X
02	Daljit Dev	Teshmont Consultants	ddev@teshmont.com		X
03	Neil Kirby	AREVA-T&D	neil.kirby@areva-td.com	X	
04	Karl Mortensen	Great River Energy	kmortensen@grenergy.com	X	
05	Wayne Litzenberger	Alameda Engineering	wayne@spiritone.com	X	
06	Dennis Woodford	Electranix	daw@electranix.com	X	
07	Ram Adapa	EPRI	radapa@epri.com	X	
08	Paul Marken	GE Energy	Paul.marken@ge.com	X	
09	Hubert Bilodeau	Hydro-Quebec Transenergie	bilodeau.hubert@hydro.qc.ca	X	
10	Chris Horwill	Areva T&D UK	chris.horwill@areva-td.com	X	
11	Brian Johnson	University of Idaho	b.k.johnson@ieee.org	X	
12	Bill Long	University of Wisconsin	willis@engr.wisc.edu	X	
13	Dragan Jovicic	University of Aberdeen	d.jovicic@abdn.ac.uk		
14	Geza Joos	McGill University	geza.joos@mcgill.ca	X	
15	Stig Nilsson	Exponent	snilsson@exponent.com		X
16	Rajiv Varma	University of Western Ontario	rkvarma@uwo.ca	X	
17	Ronny Sternberger	University of Aberdeen	ronny_sternberger@gmx.de		X
18	Randy Wachal	Manitoba Hydro HVDC RC	rww@hvdc.ca		X
19	Ani Gole	University of Manitoba	gole@ee.umanitoba.ca	X	
20	Colin Schauder	Satcin Power Systems	colin.schauder@satcon.com	X	
21	Mike Henderson	ISO-NE	mhenderson@iso-ne.com	X	
22	Subhashish Bhattachanya	NC State University	sbhatta4@ncsu.edu	X	
23	Gene Wolfe	Lone Wolf Engineering	gw_engr@msn.com	X	
24	Ben Behraban	AEP	bmehraban@aep.com	X	
25	George Karady	Arizona	karady@asu.edu	X	

**IEEE HVDC & FACTS Subcommittee Meeting  
Attendees**

<b>No.</b>	<b>Name</b>	<b>Affiliation</b>	<b>E-mail Address</b>	<b>Member</b>	<b>Guest</b>
26	Aty Edris	EPRI	aedris@epri.com	X	
27	John Paserba	Mitsubishi Electric	j.paserba@ieee.org	X	
28	Dan Sullivan	Mitsubishi Electric	dan.sullivan@meppi.com	X	
29	Jim Roedel	GE Energy	jim.roedel@ge.com		X
30	Reigh Walling	GE	reigh.walling@ge.com	X	

**APPENDIX B**  
**HVDC PROJECTS LIST**

**The HVDC Projects List was appended as an Excel document.**

**APPENDIX C**  
**PRESENTATIONS**

**Appendix C  
Presentations**

The following presentations were provided at the July 2008 IEEE PES HVDC & FACTS Subcommittee meeting:

1. John Paserba – "Summary of the T&D FACTS Panel Session"
2. Yuri Kazachkov – "TransBay Cable HVDC Project"
3. Status of EPRI's HVDC and FACTS R&D Activities
  - Ram Adapa – "HVDC Updates"
  - Aty Edris – "The Use of VSC Based BtB as a Grid Shock Absorber"