

# **HVDC: PLANNING, RISK MITIGATION, PERMITTING, AND REFURBISHMENT**

October 28-29, 2014  
Hilton Newark Penn Station  
Newark, NJ



EUCI is authorized  
by IACET to offer  
1.0 CEUs for the  
conference.

**Sponsor**



## OVERVIEW

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As the country deals with the challenge of adding more renewable energy to a constrained grid as well as the opportunities available by shipping renewable energy long distances, the use of high-voltage, direct current transmission (HVDC) is gaining momentum as an alternative to more commonly used AC systems. HVDC becomes a real choice due to its lower line losses and costs over long distances as well as its smaller right-of-way and submarine applications. Several large scale HVDC projects are being proposed and moving through permitting towards siting and construction.

This conference will discuss the planning process, lessons learned, methods to increase the stability of the grid, environmental permitting, technology developments, risk mitigation, future trends and refurbishment of existing facilities.

## WHO SHOULD ATTEND

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- Transmission planners, engineers, and operators
- Transmission project managers and engineers
- Utility finance executives
- Transmission developers and consultants
- Renewable energy developers
- Lenders and financial institutions
- Construction executives
- Permitting and environmental planners and managers
- State public utility commission advisors and staff



*This EUCI conference on HVDC allowed me to meet the key players in the industry and acquire key knowledge on upcoming power grid developments in the United States."*

– Manager – Planning & Studies,  
SNC - LAVALIN

## LEARNING OBJECTIVES


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- Review the lessons learned, the planning process and requirements for HVDC system planning
- Discuss how grid stability can be improved with HVDC controls
- Review the challenges in environmental permitting of HVDC projects
- Examine technology developments occurring in HVDC
- List some critical project hurdles which are often underestimated or overlooked in projects
- Discuss the details of the Hudson HVDC project feeding NYC
- Engage with a panel discussion on the biggest challenges facing HVDC projects
- Review some of the future trends for HVDC projects
- Develop a list of considerations for replacing or refurbishing a convertor station
- Discuss the story of HVDC developer, PowerBridge, and their projects connecting northeast load areas to power

## AGENDA

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Tuesday, October 28, 2014

- 8:00 – 8:30 a.m. Registration and Continental Breakfast**
- 8:30 – 10:00 a.m. System Planning for HVDC**
- Background and Planning Process
  - Study Requirements
  - HVDC and FACTS Lessons Learned
  - Future Applications in the Northeast
  - Summary and Conclusions
- Mike Henderson, Director - Regional Planning and Coordination, ISO New England
- 10:00 – 10:30 a.m. Networking Break**
- 10:30 – 11:15 a.m. Improving Grid Stability through HVDC Controls**
- Discover how HVDC systems can contribute to the mitigation of common AC network problems such as voltage instability, line overloads, power oscillations and sub-synchronous torsional interaction. The presentation will focus on both classical and VSC-HVDC technologies and look at system functions such as: frequency control, frequency limit control, sub-synchronous damping, power oscillation damping and reactive power control. The topics also include the implementation of remedial action schemes through DC power flow control as well as the coordination of these stability functions.
- Ramy Azar, Manager, Planning and Studies, Transmission and Distribution Division, SNC Lavalin
- 11:15 a.m. – 12:00 p.m. The Challenges of Environmental Permitting of HVDC Projects**
- Discuss and review the process and challenges for permitting of these complicated transmission projects in overhead, underground and submarine installations.
- Sarah Zappala, Project Manager and Client Development, HDR
- 12:00 – 1:00 p.m. Group Luncheon Sponsored by **
- 1:00 – 2:00 p.m. HVDC Projects and Technology Developments**
- HVDC technologies play an increasingly important role in the transmission of electric power from remotely located renewable generation resources. Also, due to public opposition against siting of new corridors for overhead lines, HVDC converters and long DC submarine and underground cable circuits located inside existing infrastructure corridors are becoming increasingly popular alternatives to construction of traditional extra high voltage AC transmission lines.
- This presentation will review data, characteristics and experiences from some of the existing HVDC projects in North America and continued industry developments towards increasingly higher HVDC capacity ratings.
- Roger Rosenqvist Vice President, Business Development, Power Systems Division North America, Grid Systems, ABB

## AGENDA

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### Tuesday, October 28, 2014 (CONTINUED)

**2:00 – 2:45 p.m.**

#### **HVDC Project Delivery: 10 Things Not to Miss**

HVDC projects provide unique challenges due to their large scale and non-standard components. As such, risk mitigation practices based on past experience play a central role in the successful and on-time delivery of such projects. Drawing from the lessons-learned of a team with more than 40 years of experience in HVDC project execution, the presenter will focus on critical project hurdles which are often underestimated or overlooked. The topics will encompass various facets including component design, project management, and energization.

- Ramy Azar, Manager, Planning and Studies, Transmission and Distribution Division, SNC Lavalin

**2:45 – 3:15 p.m.**

#### **Networking Break**

**3:15 – 4:15 p.m.**

#### **Providing Power to Manhattan**

This discussion will cover the design, engineering, construction and installation of the back-to-back Hudson HVDC converter station and will also cover the operation and maintenance services for that project.

- Peter Kohnstam, HVDC Business Development Manager, Siemens Energy, Inc.

**4:15 – 5:00 p.m.**

#### **Panel Session: Biggest Challenges facing HVDC Projects**

- Roger Rosenqvist Vice President, Business Development, Power Systems Division North America, Grid Systems, ABB

- Ramy Azar, Manager, Planning and Studies, Transmission and Distribution Division, SNC Lavalin

- Mike Henderson, Director - Regional Planning and Coordination, ISO New England

- Peter Kohnstam, HVDC Business Development Manager, Siemens Energy, Inc.

**5:00 – 6:00 p.m.**

#### **Networking Reception**

### Wednesday, October 29, 2014

**8:00 – 8:30 a.m.**

#### **Continental Breakfast**

**8:30 – 9:15 a.m.**

#### **Future Trends in the Global HVDC Market**

The HVDC global market is experiencing huge growth with some analysts predicting a 10-fold increase in demand over the next 10 years. One of the main drivers of this growth is the integration of renewables and the moving of very large amounts of power over long distances. This presentation will discuss the current and future state of the technology and its application to the industry.

- Dan Kell, Power Systems Engineer, TransGrid Solutions

**9:15 – 10:15 a.m.**

#### **Replace or Refurbish an HVDC Converter Station**

This presentation will address the major issues associated with a decision to replace, refurbish or upgrade an existing HVDC facility that is reaching its end of life. A number of owners are in the process of updating their 1970 – 1980 vintage HVDC converter stations. The presentation will touch on:

- Considerations for replacement versus refurbishment or upgrade
- Typical schedule with milestones for procurement, design, manufacturing, and construction to commissioning
- Impacts on the transfer rating of the DC link
- Case Study: BPA Celilo Converter Station Replacement

The talk will include current experience on a HVDC converter replacement project, involving a brown field replacement BPA's Celilo Converter Station at the northern end of the Pacific DC Intertie.

- Brian C. Furumasu, Sr Project Manager, Power Engineers

## AGENDA

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Wednesday, October 29, 2014 (Continued)

**10:15 – 10:45 a.m.      Networking Break**

**10:45 – 11:45 a.m.      Connecting Northeast Load Areas to Power**

After discussing the PowerBridge story, this presentation will describe both the Hudson and Neptune transmission projects development process and resulting facilities while providing a preview of new projects that are in the pipeline. The discussion of the Hudson project will give the necessary background for the attendees that will be touring it afterwards.

- James P. Nash, Vice President of Engineering, PowerBridge, LLC

**11:45 a.m. – 12:00 p.m.      Conference Assessment, Learning Outcome Review and Q&A Session**

**12:00 p.m.              Conference Adjourns**

### OPTIONAL TOUR OF POWERBRIDGE'S HUDSON HVDC CONVERTOR STATION

**12:00 – 12:20 p.m.      Board Bus for Tour**

**12:20 – 12:50 p.m.      Travel to Tour Site**

**12:50 – 2:20 p.m.      Tour of PowerBridge's Hudson HVDC Convertor station**

**2:20 – 3:00 p.m.      Travel Back to Hotel**

**FIVE EASY WAYS TO REGISTER**

<b>One: CALL</b> (201) 871-0474	<b>Two: FAX</b> (253) 663-7224
<b>Three: E-MAIL</b> <a href="mailto:register@pmaconference.com">register@pmaconference.com</a>	<b>Four: MAIL</b> PMA P.O. Box 2303 Falls Church, VA 22042
<b>Five: WEB SITE</b> <a href="http://www.pmaconference.com">www.pmaconference.com</a>	

## **INSTRUCTIONAL METHODS**

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PowerPoint presentations and case studies will be used in this conference.

## **REQUIREMENTS FOR SUCCESSFUL COMPLETION OF PROGRAM**

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Participants must sign in/out each day and be in attendance for the entirety of the event to be eligible for continuing education credit.

## **IACET CREDITS**

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EUCI has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, the (organization name) has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, (organization name) is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

EUCI is authorized by IACET to offer 1.0 CEUs for the conference.

## **EVENT LOCATION**

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A room block has been reserved at the Hilton Newark Penn Station, Gateway Center – Raymond Blvd., Newark, NJ, 07102, for the nights of October 27-28, 2014. Room rates are \$229, plus applicable tax. Call 1-973-622-5000 for reservations and mention the EUCI program to get the group rate. The cutoff date to receive the group rate is October 6, 2014, but as there are a limited number of rooms available at this rate, the room block may close sooner. **Please make your reservations early.**

## **PROCEEDINGS**

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A copy of the conference proceedings will be distributed to attendees at the event. If you are unable to attend or would like to purchase additional copies, flash drives are available two weeks after the conference is complete. The cost per flash drive is US \$395 (add US \$50 for international shipments). Flash drives include visual presentations only. Upon receipt of order and payment, the flash drive will be shipped to you via regular USPS mail.

NOTE: All presentation flash drive sales are final and are nonrefundable.

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## PLEASE REGISTER THE FOLLOWING

- HVDC: PLANNING, RISK MITIGATION, PERMITTING, AND REFURBISHMENT**  
CONFERENCE, OCTOBER 28-29, 2014 : US \$1395  
EARLY BIRD ON OR BEFORE OCTOBER 10, 2014: US \$1195
- YES, I WOULD LIKE TO ATTEND THE TOUR OF POWERBRIDGE'S HUDSON HVDC CONVERTOR STATION**  
ADD: US \$50
- I'M SORRY I CANNOT ATTEND, BUT PLEASE SEND ME THE CONFERENCE PROCEEDINGS FOR US \$295. (PLEASE ADD \$50 FOR INTERNATIONAL SHIPPING.)



How did you hear about this event? (direct e-mail, colleague, speaker(s), etc.)

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Company \_\_\_\_\_

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**OR** Enclosed is a check for \$ \_\_\_\_\_ to cover \_\_\_\_\_ registrations.

All cancellations received on or before September 26, 2014, will be subject to a US \$195 processing fee. Written cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event or publication. This credit will be good for six months. In case of event cancellation, EUCI's liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices at (201) 871-0474.