

# Plain Talk about the Electric Power System

## Education for Power Industry Professionals

**October 25—28, 2010 Columbus, Ohio**  
**Team Fishel Training Center**

### *Registration Information on Page 6*

THE ELECTRIC POWER SYSTEM enables our economy and society to function. In some way everything that impacts our lives, from our homes, our businesses, our government, and our critical infrastructure requires a dependable and economic supply of electricity.

Although the electric power system was initially developed in the late 1800s and is considered the most significant engineering accomplishment of the 20th Century, it still is undergoing change; partly driven by technology, partly driven by economic forces and partly driven by governmental action. Yet many individuals, even those involved with the industry, do not fully understand how a power system operates and what technical changes might impact the system as it continues to evolve in the 21st Century.

**Check out these exciting courses offered by the IEEE Power & Energy Society:**

#### **Our "Basics" Series For Non-Engineering Power Professionals**

- **Power System Basics—Understanding the Electric Utility Operation Inside and Out**
- **Distribution Systems—Delivering Power to the Customer**
- **The Grid—The Interconnected Electric Bulk Power System**

#### **WHO SHOULD ATTEND:**

Plan to attend if you are a utility board member or manager, a business executive, a power broker, a power marketer, a government official, a regulatory or legislative staff member, a public affairs administrator, an attorney, member of a consumer group, a member of the media, an economist, an accountant, or an engineer not in the power field, or anyone with an interest in learning about electric power systems upon which we all depend.

These courses are also appropriate for engineers who are not currently in the power industry but are transitioning to the industry or would like to learn more about it.





## COURSE DATES, DESCRIPTIONS & INSTRUCTOR BIOS

PLAIN TALK Courses October 25-28, 2010— Columbus, Ohio

### For Non-Engineering Power Professionals

#### October 25: Operation of Electricity Markets—Technical and Economic Aspects Kankar Bhattacharya

The course presents an overview of the functioning and operation of electricity markets and the operation of the electric power system as a whole in the context of the deregulated electricity market environment. The topics include electricity market structure and design, various categories of market auctions, electricity price formation, roles of the Independent System Operators in different market structures, transmission pricing paradigms, congestion management, transmission rights and ancillary services management. A highlight of the course is the discussion on country specific operating practices from various restructured power systems worldwide.

Emphasis of the course is on the understanding of issues in deregulated power system operation and the balance between the levels of technical detail alongside the economic aspects. Attendees will gain an in-depth understanding of the functioning and operation of electricity markets, as well as the background necessary to discuss topical issues in electricity markets and how they are handled world-wide.



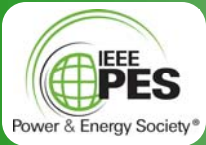
**Professor Kankar Bhattacharya** obtained his Ph.D. from Indian Institute of Technology, New Delhi, India, in 1993. He was in the faculty of the Indira Gandhi Institute of Development Research (IGIDR), Mumbai, India, during 1993-98. During his tenure at IGIDR Mumbai, he also held visiting faculty appointments at the Tampere University of Technology, Finland, and the International Institute for Applied Systems Analysis (IIASA), Austria, to work on IIASA-World Energy Council Project on Long-term Energy Scenarios for South Asia.

In 1998 he moved to Sweden to join the Department of Electric Power Engineering, Chalmers University of Technology, at Gothenburg as the first holder of the Frederik Lamm Chair of Assistant Professor (1998-2001), was awarded the Docent (2001) and promoted to the rank of a tenured Associate Professor in 2002. In January 2003, he joined the faculty of the University of Waterloo, Waterloo, Ontario, Canada, as a tenured Associate Professor in the Department of Electrical & Computer Engineering and was promoted to the rank of a full Professor in July 2007.

Professor Bhattacharya's research interests include power system operations, planning and economics- particularly in the context of restructuring of the power industry, power system dynamics, stability and control, and emerging issues in power sector deregulation. He has been involved in Ph.D. supervision, industrial research projects, power-engineering curriculum development and education at under-graduate, graduate, Ph.D. levels as well as conducting external (industrial) courses.

Professor Bhattacharya received the Runner-up Award for *Application of Operations Research to Development* from International Federation of Operational Research Societies (1996), the Best Paper Award at the IEEE T&D Conference (2001), the Gunnar Engstrom Foundation Award from ABB Sweden (2001) for his research in power system economics. He has also been awarded the Distinguished Performance Award (2004) and the Outstanding Performance Award (2006) by the University of Waterloo.

Professor Bhattacharya is the author of the well received book- *Operation of Restructured Power Systems*, Kluwer Academic Publishers (2001). He is one of the Editors of *IEEE Transactions on Power Systems* (2005-present) and *IEEE Power Engineering Letters* (2005-present).



## COURSE DATES, DESCRIPTIONS & INSTRUCTOR BIOS

PLAIN TALK Courses October 25-28, 2010— Columbus, Ohio

### For Non-Engineering Power Professionals

#### October 26: Power System Basics—Understanding the Electric Utility Operation Inside and Out William J. Ackerman

The focus of this course will be on providing a thorough foundation in electric power systems, planning, operations, economics and various regulatory frameworks. Basic electrical terminology will be explained in simple to understand language with regard to design, construction, operation and maintenance of power plants, substations and transmission and distribution lines. Anyone who is not a professional engineer and involved in the decision making process within the electric utility environment can benefit from attendance at this course.

##### TOPICS INCLUDED:

- Introduction and Brief History
- Fundamentals of Electric Power
- Generation and Transmission
- Distribution and Utilization
- Power Systems Protection
- Power Systems Operation and Interconnection
- Regulation.



**William J. Ackerman** started work with Automatic Electric Company on one of the first solid-state SCADA systems (CONITEL-2000) after receiving his B.S. and M.S. degrees in Electrical Engineering. He then worked for Leeds & Northrup Company as Manager of Conitel Systems. Bill joined Florida Power Corporation in 1973 as Manager of Energy Control Center Operations, responsible for a new Energy Management System (EMS) computer system and for power system generation and transmission operations. He joined ABB as a Project Manager in the Systems Control Division in 1990. Bill transferred to ABB's Substation Automation and Protection Division in 1996, where he was Manager of Substation Automation Systems until he retired in December 2002. He now works as an independent consultant. A major activity is providing NERC-certified training to power system operators and dispatchers related to all aspects of the design and operation of electric power systems. Bill is a Life Senior Member of the IEEE and the IEEE Power and Energy Society; and a member of the IEEE-PES Distinguished Lecturers Panel. He is past-Chairman of the Substations Committee of the PES, and of the Automatic and Supervisory Systems Subcommittee. Bill is an active member of the IEEE Standards Association, and the Standards Working Groups of the PES Substations Committee. He is a member of the U.S. Delegation to TC57 of the International Electrotechnical Commission (IEC). He has authored and co-authored numerous papers, including the IEEE Tutorial, Fundamentals of Supervisory Systems.

#### October 27: Distribution System—Delivering Power to the Customer Joseph L. Koepfinger & Maurice Ney

Attendees will receive a thorough briefing and understanding of the issues associated with the planning, engineering, design, operation, and automation of electrical distribution systems. This course is intended for those who are not familiar with the delivery of electricity to the end user.

##### **The Function of the Distribution System and Its Place in the Electric Delivery System**

*An Examination of the Planning Issues:* Demographics, economics, optimization of asset usage, safety, aesthetics, customer relationships, government regulator relationships, reliability-including availability, dependability, and quality.

*Engineering Design and Operation Issues:* Operational designs, equipment performance, overhead and underground construction.

*Historical Development:* Evolution of the distribution system—past to present.

*The Distribution System in North America and in Other Countries*

*Overhead vs. Underground:* Construction advantages and limitations. Examining reliability, aesthetic, restoration, outages and lessons learned.

(Continued on page 4)



## COURSE DATES, DESCRIPTIONS & INSTRUCTOR BIOS

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### For Non-Engineering Power Professionals

(Continued from page 3) **October 27: Distribution System (con't)**

#### **Distribution Planning Considerations: The Long Range and the Short Range Issues**

*Distribution Engineering Considerations*

*Engineers-Technicians & Others:* Electrical, Civil/Surveyors and Technicians.

*Engineering Tasks:* Includes the planning process and technology issues, budgetary issues, loss mitigation, circuit routing, circuit load ratings, voltage regulation, equipment performance, type of equipment, equipment limitations and standards.

*Operating Engineering Tasks:* Operating challenges to the engineer covering practical problems including crew schedules, union rules, safety rules and accounting procedures.

*Distribution Automation:* Concepts and differences in distribution automation.

*Defining the Project:* Including service reliability, outage management, disaster recovery.

#### **Distribution and Distributed Generation**

*Radial Circuits:* National and international issues and the role of standards.

*Secondary Network Circuits:* Addressing the interconnection challenge.



**Joseph L. Koepfinger** is a consultant with 51 years of utility experience, recently retired from Duquesne Light Company. In his last position he was Director of System Studies and Research, where he was responsible for managing the research programs. While employed at Duquesne he was responsible for the conduct of special investigations of technical problems, insulation coordination, surge protection and, in particular, the studies of electrical transient conditions in power systems. Recent investigations under his leadership involve the study of the characterization and management of electromagnetic fields, cable failure, manhole explosions, transformer fire control, interconnection of distributed resources and advanced outage management systems. He has worked in the fields of protection, communications and control, and surge protection. He holds a Bachelor of Science and Master of Science in Electrical Engineering from the University of Pittsburgh. He is a licensed professional engineer in the state of Pennsylvania and a Certified Cogeneration Professional.

**Maurice Ney** has extensive experience in operations, engineering, planning, and customer care. He has a proven record of achieving continuous improvements in process, costs, system improvements, and customer satisfaction. In addition he has significant experience in managing transmission and distribution operations in the utility industry. As an independent consultant on utility operations, he has worked as a team member on projects for utilities in the Northwest and on the East Coast performing evaluations of current state transmission and distribution operations and the design of future state processes for improved performance and reliability. He has worked with the Electric Power Research Institute as a technical consultant on outage management, recovery and disaster planning, strategic planning and development of technical specifications for the design of an Advanced Outage Management System, and the development of key initiatives targeted at the prevention of, preparedness for, and recovery from man made and natural disasters and the major electric power outages that can accompany them. He has held various engineering and management positions at a major electric utility. During this time, he has actively participated in the development of a \$150 million capital and operating budget, developed an incentive compensation model based on profitability and customer satisfaction, developed strategies for complying with state and federal regulatory agencies, and assisted in the development of a process-focused organization and strategies to attain top quartile performance as defined by customer satisfaction cost/customer, and reliability. He received a Bachelor of Science degree in Electrical Engineering from Pennsylvania State University and he is a Licensed Professional Engineer in Pennsylvania.



## COURSE DATES, DESCRIPTIONS & INSTRUCTOR BIOS

PLAIN TALK Courses October 25-28, 2010— Columbus, Ohio

### For Non-Engineering Power Professionals

#### October 28: The Grid—The Interconnected Electric Bulk Power System

**Robert W. Waldele**

This course is intended for anyone interested in gaining a deeper understanding of how the interconnected electric bulk power systems in the United States or “grids,” work. This would include economists, attorneys and other non-technical professionals, as well as engineers and technically educated personnel. It should be particularly relevant for market participants, since a better understanding of the grid and how it functions will lead to more efficient use of resources and avoidance of unnecessary costs.

##### TOPICS INCLUDED:

- The concept of interconnection.
- Power flow, “loop flow,” transient stability, and VAR.
- Control Areas, Reliability Councils, NERC/ERO, ISOs and RTOs.
- Reliability standards and contingency analysis.
- Transmission Transfer Capabilities and how they are determined.
- Economic constraints vs. reliability risks.
- The Great Blackouts.

**Robert W. Waldele** is a power system consultant with over 35 years of experience in EHV transmission system reliability studies, power system operation, and system operator training. He holds a BSEE from Northwestern University Technological Institute (McCormick School of Engineering). Bob joined the New York Power Pool in 1972 in the energy management system support group. As a Senior Engineer in Transmission Planning he coordinated system planning and reliability studies for the coordination of the bulk transmission system in New York State. While there he also served as Manager of System Operator Training and developed the transition program to open access and market operation under the New York Independent System Operator, Inc. (NYISO). Following NYISO start-up, he was named Manager of the NYISO Operations Engineering group and the Electric System Planning department. He has served on a number of working groups under the Northeast Power Coordinating Council, including Special Protection Systems, Interconnected System Dynamics, Dynamic Controls and System Operator Training. He was a member of the New York State Reliability Council’s Reliability Rules Subcommittee. He has been an active participant in IEEE working groups including Transmission Subcommittee, Power System Dynamics, and the Operator Training Working Group. He served on the US-Canada Joint Task Force August 14, 2003 Blackout Investigation “Operator Tools, Training & EMS Performance Evaluation” Team, and supported the Sequence of Events and Root Cause Analysis teams.

The Grid course is based on seminars and workshops previously conducted for a variety of organizations, including: BC Hydro, Cegelec ESCA (Bellevue, WA), the U.S. Department of Defense, FERC Staff, the Florida PSC Staff, Florida Reliability Coordinating Council, the ISO-New England Board, Kansas City Power & Light, Oglethorpe Power Corp., Mappcor (St. Paul, MN), Mirant Corporation (Atlanta), the Nebraska Society of Professional Engineers, the New York State Reliability Council, the New York State Public Service Commission, and ITC Transmission.

**See Page 6  
for Registration  
Form and Details!**





# Plain Talk about the Electric Power System

October 25-28, 2010 Columbus, Ohio  
Team Fishel Training Center  
1366 Dublin Road Columbus, OH 43215

Name \_\_\_\_\_ Company \_\_\_\_\_ Title \_\_\_\_\_  
Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Phone \_\_\_\_\_ Fax \_\_\_\_\_ Email \_\_\_\_\_

**EARLY BIRD DISCOUNTS:** An early bird 10% discount is offered to attendees who register and pay on or before Sept. 30, 2010.  
**GROUP DISCOUNTS:** 10% discount offered to two or more conference registrants from the same company or organization. Contact Susan Koval (s.koval@ieee.org, 732-562-6897) for discount code prior to registration.

Fee includes continental breakfasts, lunches, refreshment breaks and all course materials.

### 1-CHOOSE YOUR ENROLLMENT OPTION:

**FOUR COURSE ENROLLMENT** (please check the appropriate box)

- Early Bird Fee** (paid registration on or before Sept. 30, 2010) - \$2,444
- Regular Fee** (paid registration after Sept. 30, 2010 and on site) - \$2,715
- Group Rate** (10% discount from Early Bird or Regular Fee)  
On or before Sept. 30, 2010: \$2,200 per person After Sept. 30: \$2,444 per person Group Name: \_\_\_\_\_

**THREE COURSE ENROLLMENT** (please check the appropriate box)

- Early Bird Fee** (paid registration on or before Sept. 30, 2010) - \$1,935
- Regular Fee** (paid registration after Sept. 30, 2010 and on site) - \$2,150
- Group Rate** (10% discount from Early Bird or Regular Fee)  
On or before Sept. 30, 2010: \$1,742 per person After Sept. 30: \$1,935 per person Group Name: \_\_\_\_\_

**TWO COURSE ENROLLMENT** (please check the appropriate box)

- Early Bird Fee** (paid registration on or before Sept. 30, 2010) - \$1,360
- Regular Fee** (paid registration after Sept. 30, 2010 and on site) - \$1,510
- Group Rate** (10% discount from Early Bird or Regular Fee)  
On or before Sept. 30, 2010: \$1,224 per person After Sept. 30: \$1,360 per person Group Name: \_\_\_\_\_

**ONE COURSE ENROLLMENT** (please check the appropriate box)

- Early Bird Fee** (paid registration on or before Sept. 30, 2010) - \$715
- Regular Fee** (paid registration after Sept. 30, 2010 and on site) - \$795
- Group Rate** (10% discount from Early Bird or Regular Fee)  
On or before Sept. 30, 2010: \$644 per person After Sept. 30: \$715 per person Group Name: \_\_\_\_\_

### 2-CHOOSE YOUR COURSE(S):

- Electricity Markets
- Power System Basics
- Distribution Systems
- The Grid

### TO REGISTER ONLINE, AND TO FIND INFORMATION ON LOCATION AND ACCOMMODATIONS:

**GO TO [www.ieee-pes.org](http://www.ieee-pes.org) and follow the links to EDUCATION/PROGRAMS/PLAINTALK**

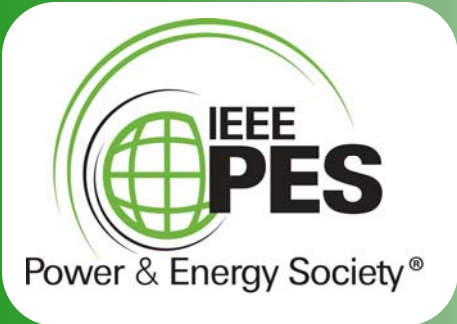
**OR**

- Mail to: IEEE-PES, 445 Hoes Lane, Piscataway, NJ 08854
- FAX to: (732) 562-3881
  - Check (Payable to IEEE-PES)
  - Purchase Order—Please attach a copy of the Purchase Order along with your registration form.
  - Credit Card: \_\_\_\_\_ VISA \_\_\_\_\_ MasterCard \_\_\_\_\_ American Express
  - Card # \_\_\_\_\_ Exp. Date \_\_\_\_\_ Security Code: \_\_\_\_\_
  - Name on Card \_\_\_\_\_ Authorized Signature \_\_\_\_\_

TOTAL ENCLOSED \$ \_\_\_\_\_

**Please contact Susan Koval (s.koval@ieee.org , (732) 562-6897) or visit [www.ieee-pes.org](http://www.ieee-pes.org) for additional information.**

Cancellations made in writing prior to October 11 will be fully refunded, less a \$50 cancellation fee. There will be no refunds after October 11, 2010. If an enrollee is unable to attend, the fee may be used by a substitute, or for enrollment in a future course. In the unlikely event of an event cancellation, registrants will receive a full refund for the cost of registration only.



**WHETHER YOU WORK IN THE ELECTRIC POWER INDUSTRY OR NOT**, if you're interested in learning more about how the electric power system works, you now have the opportunity to gain the knowledge you need in a manner that you can understand.

As an attendee you will gain insight into the concerns of engineers, the demands of regulators and consumer groups and a perspective of how these factors play a major role in the operation of today's electric power systems.

**PES Plain Talk courses for the Non-Engineering Power Professional** will help you to understand technical aspects of the Electric Power System, even if you do not have an engineering background. You will gain insights into the concerns of engineers, the demands of regulators and consumer groups, and the factors and trends that impact the operation of today's electric power systems. These courses are also appropriate for non-power engineers who are transitioning to the electric power industry.

**PES Plain Talk courses for the Engineering Power Professional** are designed for engineers and technical staff in the electric power industry who are looking to increase their understanding and knowledge of critical technical areas in the industry. The courses provide an overview of the topic while allowing for interaction and a deeper dive into particular areas of interest.

**PES Plain Talk courses about the Smart Grid for Power Professionals** are designed for both technical and non-technical staff in the electric power industry who are looking to increase their insight into one of the hottest technical areas in power today. The courses provide the fundamentals of smart grid along with practical tools that can be used in the workplace.

### ABOUT PES:

The Power & Energy Society is the society of electric power and energy professionals throughout the world. It provides the world's largest forum for sharing the latest in technological developments in the electric power industry, for developing standards that guide the development and construction of equipment and systems, and for educating members of the industry and the general public.



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The IEEE has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this approval, the IEEE has demonstrated that it complies with the IACET Standards which are widely recognized as standards of good practice internationally. As a result of their Authorized Provider membership status, IEEE is authorized to offer IACET CEUS for its programs that qualify under the IACET Standards.

**Unless noted otherwise, courses run from 8:00 am—5:00 pm.  
Registration and continental breakfast begin at 7:30 am.**