



## IAS 2010 Conference Tutorial Schedule October 4 - 7, 2010

Welcome to the 2010 IEEE Industry Applications Society Annual Meeting, and to its expanded tutorial program! We are happy to build on our past success and offer a comprehensive, in-depth, practical program to suit practicing engineers looking at furthering their skills and hearing from expert practitioners in their area of interest. This program, set in Houston, TX, from October 4-7, 2010 is available with a single registration, which can be as low as \$400. For this registration you can attend up to seven tutorials, and get the material for all 12 of them. Please check our website for more details, including updates as the schedule below is tentative and subject to change: [www.ieee.org/ias2010](http://www.ieee.org/ias2010)

Welcome to Houston!

Bruno Lequesne, Chair IEEE IAS Annual Meeting

### Monday, October 4 (afternoon session.)

- HVdc Transmission Systems: Technology Review and Emerging Trends – Dr. Babak Badrzadeh - Vestas Wind Systems A/S

### Tuesday, October 5 (morning session)

- Power System Engineering Calculations Part I - Robert Spiewak, P.E. - Polamex, Inc.

### Tuesday, October 5 (afternoon session)

- Power System Engineering Calculations Part II - Dr. Kurt Ederhoff, PhD, P.E. – VI Engineering, LLC
- Industrial & Commercial Power System Surge Overvoltage Protection – Dev Paul - AECOM Transportation

### Wednesday, October 6 (morning session)

- MV Adjustable - Speed Drives - Kurt LeDoux - Toshiba International Corp
- IEEE Standard 3007.2 Recommended Practice for the Maintenance of Industrial and Commercial Power Systems - Robert Schuerger, PE - HP Critical Facilities Services

### Wednesday, October 6 (afternoon session)

- Safety by Design / Arc Flash Protection - Jim Bowen, P.E. – Dashiell Corp
- Field Monitoring and Gas-Oil Analysis of Large Power Transformers – Brian Sparling - GE Energy Services Canada

### Thursday, October 7 (morning session)

- Grounding Considerations for Industrial Power Systems – Matt McBurnett, P.E. - V I Engineering, LLC
- Over-Current Coordination for Industrial Applications - Doug Durand, P.E. - KBR, Dominik Pieniasek, P.E. - VI Engineering

### Thursday, October 7 (afternoon session)

- 2011 NEC Industrial Updates - John Paschal, P.E. - Paschal Engineering, Inc.
- A Physical Understanding of Transients in Synchronous Machines Bogi Bech Jensen - Technical University of Denmark



### Grounding Considerations for Industrial Power Systems

Matt McBurnett, P.E. - V I Engineering, LLC

- Grounding System Design Principles and Concepts
- Grounding System Performance
- Recommended Design Procedures / IEEE Std 80
- Integrated Grounding System Design
- Grounding System Testing and Evaluation

### Safety by Design / Arc Flash Protection

Jim Bowen, P.E. – Dashiell Corp

- Safety by Design Considerations and Goals
- Arc Faults and Incident Energy
- Arc Fault Characteristics and Hazards
- Safety Strategies, Options, New Technologies
- High Resistance Grounding
- NFPA 70 E 2010

### Field Monitoring and Gas-Oil Analysis of Large Power Transformers

Brian Sparling - GE Energy Services Canada

This technical seminar will focus on the benefits to be achieved with the application of on-line monitoring technologies of critical transformers.

- Life management techniques for power transformer assets
- Failure detection and avoidance
- Understanding the transformer as a “process”
- The chemistry and physics of transformer insulation systems,
- Moisture condition analysis of the insulation system
- Correlating data to the actual operating conditions

### MV Adjustable - Speed Drives

Kurt LeDoux - Toshiba International Corp

- MV Drive Technology and Architecture
- Solid –State Switching Devices
- Basic Power Conversion Techniques
- Drive Voltage Stress Issues
- Bearing Shaft Currents
- Harmonics and Mitigation
- Starting Motors with Drives

### 2011 NEC Industrial Updates

John Paschal, P.E. - Paschal Engineering, Inc.

- 2011 NEC Industrial Applications Changes and Updates
- 2011 NEC Chapter 5 Hazardous (Classified) Locations

### Power System Engineering Calculations Part I

Robert Spiewak, P.E. - Polamex, Inc.

- Review of Basic Electrical Engineering Formulas and Calculations
- Review of Related Mathematical Concepts
- Review of the Per Unit Method
- Understanding Linearization and other Theorems
- Problem Solving

### Power System Engineering Calculations Part II

Dr. Kurt Ederhoff, PhD, P.E. - VI Engineering, LLC

- Review of Electrical Definitions and Concepts
- Mathematics for Basic Electrical Calculations
- Calculating Power Factor and Harmonics
- Equipment Sizing Calculations
- Short Circuit and Grounding Calculations
- Problem Solving

### Over-Current Coordination for Industrial Applications

Doug Durand, P.E. - KBR

Dominik Pieniasek, P.E. - VI Engineering, Inc.

- Types of Fault Current
- Protective Devices and Characteristic Curves
- Coordination Time Intervals (CTIs)
- Partial Differential Relaying
- Directional Over Current Protection
- Coordinating a System
- Rules of Thumb for MV Equipment

### Industrial & Commercial Power System Surge Overvoltage Protection

Dev Paul - AECOM Transportation

This tutorial will cover the overview of the Surge Overvoltage Protection of Industrial & Commercial AC Power System as well Protection of dc Rapid Transit System

### IEEE Standard 3007.2 Recommended Practice for the Maintenance of Industrial and Commercial Power Systems

Robert Schuerger, PE - HP Critical Facilities Services

This tutorial will cover what was formerly Chapters 5 and 6 from the Yellow Book and Chapter 8 from the Orange Book which are now a single comprehensive standard on maintenance for industrial and commercial power systems. New material not in the previous chapters on Reliability Centered Maintenance and Partial Discharge Testing of cables has been added to the standard.

### A Physical Understanding of Transients in Synchronous Machines

Bogi Bech Jensen - Technical University of Denmark (DTU)

This tutorial will allow practicing engineers to develop a better understanding of how synchronous machines behave during transients and to give them a physical understanding of what the transient and sub-transient reactances represent.

### HVdc Transmission Systems: Technology Review and Emerging Trends

Dr. Babak Badrzadeh - Vestas Wind Systems A/S

This tutorial presents a review of the state-of-the-art HVdc technologies, ac and dc system interaction issues, emerging trends and technologies, and planning studies for HVdc transmission systems.

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