



Calgary, March 29-31, 2010

## IEEE IAS Electrical Safety, Technical and Mega Projects Workshop

March 29-31, 2010 Telus Convention Center, Calgary, Alberta, Canada

[www.ieee.org/estmp](http://www.ieee.org/estmp)

The IEEE IAS ESTMP Workshop provides a forum for exchanging and advancing industry knowledge in the areas of electrical safety, engineering design, system reliability and the implementation and execution of Mega Projects. The Workshop focus will be to share innovative concepts, successes as well as lessons learned in the areas of: 1) advancing state of the art knowledge and best practices, 2) stimulating innovation in creating the next generation of technology and 3) design and implementation of Mega Projects. Individuals that have participated in past ESTMP workshops continue to attest to the high quality of the presentations and tutorials. Anyone involved with electrical, safety, construction, or design would benefit from this workshop. Some of the companies that continue sending employees to the workshop include: **End User**, Albian Sands Energy Inc., Cenovus Energy, Chevron, ConocoPhillips Canada, DuPont, Enbridge Pipelines, EnCana, Husky Oil Operations Limited, Irving Oil, Nova Chemicals Corporation, Petro-Canada, Shell Canada Energy, Shell Oil, Suncor Energy Inc, Syncrude Canada Ltd., Transalta, , **EPCM**, Bantrel Canada, Capital Engineering, CH2MHILL Canada, Colt Worley Parsons, CoSyn Technology, Dickin Engineering Inc., Emerson Industrial Automation, Fluor Canada Ltd., Jacobs Engineering, Magna IV Engineering, Sinai Engineering, SNC Lavalin Inc., Tri Ocean Engineering Ltd., **E&I Contractor**, Ber-Mac Electrical And Instrumentation, Chemco Electrical Contractors Ltd., Laird Electric Inc., Magna Electric Corporation, PCL Intracon Power Inc., PowerComm Inc, Pyramid Corporation,, **Universities**, University of Alberta,

### KEYNOTE SPEAKER

Michael McFadden - Independent Project Analysis -The Lost Projects Decade in Alberta, A Cautionary Tale

### PRESENTATIONS

Electrical Safety and Maintenance - Special "On Line" Precautions	Kerry Heid - Magna Electric Corporation	Various on-line electrical maintenance techniques that are not specifically mentioned in CSA Z462 and the special safety precautions involved with them. Alternate technologies/strategies for safest required results.
Hazard/Risk Category Task Tables – Designing a New Approach	Daniel Roberts - Schneider Electric	The incident energy analysis method versus the hazard/risk category method of selecting arc flash personal protective equipment: what can each method teach the other?
Corporate Electrical Safety: Balancing the Risk	Kerry Wycislik , Jared Robertson- Encana	The nature of a corporate Electrical Safety Program and the pitfalls on the journey to practicality in an ever-increasing world of regulation. We will demonstrate that owners must accept some risk; in effect "balancing the risk" to achieve a program that is practical for the electrical worker.
Electrical Safety Program Performance Auditing	Terry Becker - ESPS, Bert Neish - Shell	Measuring performance is an important aspect of electrical safety that is often not well understood, nor well implemented. This paper will review the electrical safety audit process and a large company's experience in several detailed audits completed for their facilities.
Current Based, Communication Assisted High Speed Protection System to Limit Arc Energy	Steel McCreery - GEMultilin, Patrick Robinson – Altelec Engineering Services	This presentation outlines how to utilize communication networks to implement high speed coordinated protection schemes to reduce arc incident energy, with minimal incremental cost.
Mineral Insulated Heating Cable Sheath Temperatures	Sudhir Thorat, Latif Ahmadyar - Tyco	MI heating cable sheath temperature prediction methods vary by testing agencies, standards and manufacturers. This presentation compares these methods and suggests a reliable and repeatable way to predict MI sheath temperatures. The Oil-sands implications of this repeatable method are discussed including design factors, constructability and reliability.
Applications of Current Limiting Breakers	Scott Basinger - Eaton, Darcy Braun - ETAP Canada	This presentation will discuss the construction, application and performance of molded case circuit breakers that are qualified as 'current limiting' as well as those breakers incorporating fusible elements
Arc Flash Mitigation by Fast Energy Capture	Marcelo Valdes– GE	Methods of arc flash energy reduction fall in one of three categories: hi-speed circuit protection, electrical enclosure containment, and crowbar circuits. This presentation will describe a new method for arc-to-arc energy transfer. The arc is transferred into a containment device, and is achieved without the need to introduce bolted fault current, limiting damage to electrical equipment. It will also discuss various implementation methods and challenges in protection schemes as pertaining to arc-flash.
Practical Learnings with Alternative Power Transformer Arrangements	Ralph Elder - ABB, Richard Loiselle - Suncor, Doug Brooks – Bantrel	Single core, 3-winding transformers were applied in select industrial installations. While providing good capital savings, there were unforeseen performance consequences. This presentation will examine these consequences and the lessons learned along with remedial actions.
Firewalls for Substation Transformers	Roy Scholvinck, Clem Hiel – Intellifirewall	This presentation will examine historical practices in transformer firewall design and construction along with key performance parameters. Also presented are new solutions which address the thermal, mechanical and



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		environmental performance of transformer firewalls.
Greenfield Power System Design	Richard Loiselle; Don Morency - Suncor, Bill Wasylshyn - Fluor, Terry Becker – ESPS	This presentation will outline the process and results in designing a large industrial power system in a multi-EP environment including the owner's requirements, inherent safety in equipment design and selection, along with lessons learned.
Cable Tray Installations - Splice Support Innovations	Bill Smith - T&B	NEMA guidelines require that cable tray splices be located at quarter span locations between supports which does not work well in many instances including cable tray pre-installed on modules. This presentation will examine this, and other related issues along with suggested solutions.
History and Advances With Aluminum for Conductors	Alex Mak – Alcan	The presentation will review aluminum wiring history along with recent developments in aluminum alloys in power distribution applications. Also addressed are corrosion issues related to copper, aluminum and steel in electrical applications.

### PANEL DISCUSSION

OBIEC – Opportunities and Pitfalls	Inherent Safety by Design (Equipment), shift discussion to european model?	Turn-around and Construction Power
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### TUTORIALS

1. **Application and System Design Considerations of an Uninterruptible Power System in Industrial Facilities**

**Ray Mohammed - Eaton Powerware**

The tutorial will go through the complete design of an Industrial system employing AC UPS power and associated design considerations including:

1. Common types of UPS including Off-Line, On-Line Double Conversion, and Ferro-Resonant
2. Various topologies employed in achieving maximum uptime, such as A+B distribution, dual string battery banks, dual utility feed, etc.
3. Different battery technologies available, and the pros and cons of a 10 year VRLA vs a 20 year Wet / Gel cell.
4. System design considerations such as back-up power, transfer switches, upstream equipment sizing through to various methods of distribution to the loads.

The technologies presented and discussed in this tutorial will be applicable to any size of UPS however the focus will be on 3 phase, larger KVA units as more applicable to today's industrial facilities..

2. **How to Specify a Motor - Referencing Standards - What You Need and What You Don't**

**Dennis Bogh, Nick Stranges, Meredith Stranges – GE**

1. Meeting the application standards, enough but not too much.
  - Speed, Torque, Acceleration, Thermal, Mechanical
  - Examples
2. Insulation standards: What specification is required for insulation life.
  - Testing, enclosures, temperature
  - Examples
3. Motors for ASD use. Laying out the big (and small) issues.
  - Voltage waveforms, resonances, cooling, speed range
  - Examples

### SPONSORSHIP

There are opportunities to sponsor such items as breakfasts, coffee breaks, lunch, presenters gifts, audio visual aids, printing of the workshop material, CDs, hospitality suites, social events, etc. as well as participate in the exhibition. For further information, contact our sponsorship chair, Tim Driscoll.

Tim.Driscoll@shell.com (403) 560-3211

### EXHIBITION

Exhibitions are held on Monday and Tuesday afternoons following the technical sessions. Vendors and suppliers are invited to showcase their products & services. For further information, contact our exhibition chair, Ken Martin.

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