

# Initial Program 2014 EPEC November 13-14

Thursday, November 13, 2014

8:00 Opening Session: Plenary speaker Mr. John Macdonald

09:00 – 10:30 hours

## Session 1 Protection (I)

Securing IEC 60870-5-104 using Deep Packet Inspection Technology (38)  
Eric Byres, Dennis Mantz, Ron Brash, Tofino Security, a Belden Brand

The Duo-Domains of IEC 61850 (81)  
Dustin Tessier, Tesco

The Resistance Test is Not Enough (51)  
Carl Moller, CANA High Voltage Ltd.

Performance of Turbogenerator LOE Protection in FACTS Controllers Incorporated Transmission Networks (29)  
Mohamed Elsamahy, Department of Electrical Power and Machines, The Higher Institute of Engineering; Al Shorouk Academy, Al Shorouk City, Egypt

Break: 10:30 – 10:45

## Session 3 Protection (II)

Considerations in the Application of Protection Schemes, Settings and Acceptance Tests for Short Lines with Tapped Transformers (44)  
Rasheek Rifaat, Ken Martyn, Klaus Honigman, Jacobs Canada

Impact of Generator Distance Phase Backup Protection on Generator Over-excitation Thermal Capability during System Disturbances (31)  
Mohamed Elsamahy, Department of Electrical Power and Energy, Military Technical College, Cairo, Egypt

PMU Based System Protection Scheme (57)  
Matin Rahmatian, William Dunford, The University of British Columbia; Ali Moshref, BBA Incorporation

Impact of Current Transformer Saturation on Fault Protection and Power System Stability (49)  
Hamed Golestanifar, Jagtar Tatla, Ron Strem, Sami Abdulsalam, Alberta Electric System Operator

Lunch: 12:15 – 13:15

## Session 2 Power System Operation

New reduced model approach for power system state estimation using artificial neural networks and principal component analysis (43)  
Amamihe Onwuachumba, Mohamad Musavi, University of Maine

Power System Stability Monitoring using Synchronized Phasor Measurements (32)  
Saikat Chakrabarti, Indian Institute of Technology, Kanpur India, Benjamin Jeyasurya, Memorial University of Newfoundland

Stability Assessment of Turbine-Generators Connected to Relatively Weak Areas (47)  
Ralph Liu, Mahmoud (Maz) Mazadi, Liuzhong Shi, Mohamed Mobarak, AESO

The Impact Analysis of Various Unbalance Factors on the PCC Voltage Imbalance (42)  
Yuan-Yuan Sun, University of Alberta; Jiaqi Li, Shandong University; Zhiming Yin, State Grid Training Center of Beijing Electric Power Company; Ke Zhu, Shandong University

## Session 4 Planning

A Multi-objective Model for Transmission Planning Under Uncertainties (39)  
Chunyu Zhang, Qi Wang, Yi Ding, Jacob Østergaard, Center for Electric Power and Energy, Technical University of Denmark

A Multi-State Model for Renewable Resources in Distribution Systems Planning (12)  
Majed Alotaibi, Magdy Salama, University of Waterloo

Application of Genetic Algorithm in Distribution System Planning Considering Voltage Sags (34)  
Edwin Garcia, University of Antioquia; Carlos Garcia, State Company of Medellin

Accommodating High Levels of Renewable Generation in Remote Microgrids under Uncertainty (35)  
Walied Alharbi, Kankar Bhattacharya, University of Waterloo

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15:15 – 15:00

### Session 5 Renewable Energy (I)

Investigating the Characteristics and Effects of FCLs on Distribution Grids with Wind Generation (64)  
Somayeh Farhadkhani, Jacques Lobry, Francois Vallee, Department of Electrical Power Engineering University of Mons, Mons, Belgium; Olgan Durieux, ORES Distribution Grid Operator Technical Department, Belgium

Most Influential Variables for Solar Radiation Forecasting Using Artificial Neural Networks (74)  
Bader Alluhaidah, Shadi Shehadeh, Mohamed El-Hawary, Dalhousie University

Prediction of Voltage Related Power Quality Values From a Small Renewable Energy Installation (52)  
James Rodway, Petr Musilek, University of Alberta; Stanislav Misak, Lukas Prokop, VSB-Technical University Ostrava

Quantifying System Adequacy Benefit of Wind Power Diversity (76)  
Rajesh Karki, University of Saskatchewan, Dinesh Dhungana, Saskpower

Break: 15:00 – 15:15

### Session 7 Renewable Energy (II)

Assessment of Disruptive Innovation in Emerging Energy Technologies (41) Frederick P. Adams, Megan Moore, Blair Bromley, Atomic Energy Canada Ltd.

A Review of the Latest Voltage and Frequency Ride-Through Requirements in Canadian Jurisdictions (16)  
M. Amin Zamani, Nicolas Wrathall, Kinectrics Inc.; Robert Beresh, Hydro One Networks Inc.

Inclusion of Wind Generation Modeling into the Conventional Generation Adequacy Evaluation (86)  
Abdulaziz Almutairi, Mohamed Ahmed, Magdy Salama, University of Waterloo

Computational Time Quantification for the Single Diode PV Models (73)  
Yousef Mahmoud, University of Waterloo

Conference Dinner: 18:00 with invited speaker

### Session 6 Control

An optimal control solved by Pontryagin's minimum principle approach for a fuel cell/supercapacitor vehicle (85)

Hanane HEMI, Jamel Ghouili, Université de Moncton; Ahmed Cheriti, Université du Québec à Trois-Rivières

Modeling, Analysis and Robust Control of the Master VSC in Multi-terminal Hybrid AC/DC Grids with LCL Filter (68)

Masoud Davari, Yasser Abdel-rady I. Mohamed, University of Alberta

ANFIS Based Controller for Rectifier of PMSG Wind Energy Conversion System (3)

Ahmed Ali, Helwan University; Adel Moussa, U of C; Karam Abdelatif, Moustafa Eissa, Sherif Wasfy, Helwan University; Om Malik, U of C

Multidimensional Optimal Control of wind Turbine Generator (75)

Abdulrazig Alarabi, Mohamed El-Hawary, Dalhousie University

### Session 8 CI Applications

Optimal Filter Placement and Sizing using Ant Colony Optimization in Electrical Distribution System (69)

Fawaz Alhaddad, Mohamed El-Hawary, Dalhousie University

Optimal Power Flow and Dynamic Flow Controller Using Imperialist Competitive Algorithm (6)

Ehsan Heidari, Ali A. Afzalian, Mojtaba Khederzadeh, Power and Water University of Technology; Davood Foroutani, Dana Oil Service

Optimal power flow by Black Hole Optimization Algorithm (70)

Zakareya Hassan, Mohamed El-Hawary, Dalhousie University

Renewable Energy System Design by Artificial Neural Network Simulation Approach (15)

Amar Kumar, Teccis Corporation; Marzia Zaman, Cistel Technology Inc; Nita Goel, Teccis Corporation; Vineet Srivastava, Cistel Technology Inc

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Friday, November 14, 2014: 8:30 – 10:00

### Session 9 WORKSHOP:

Disruptive Innovation in Emerging Energy Technologies (28)  
Frederick P. Adams, Megan Moore, Atomic Energy Canada Ltd.

Break: 10:00 – 10:15

10:15 – 12:00

### Session 11 Modeling

Mathematical representations of electrical power: vector or complex number? Neither! (62)  
Alexander Petroianu, University of Cape Town/  
University of Calgary

Dynamic Modeling of High-Voltage Circuit Breaker Operating Mechanism for Fault Analysis (9)  
Ali Forootan, Ali A. Afzaljan, Power and Water University of Technology; Ali Nadian Ghomsheh, Shahid Beheshti University; Davood Foroutani, Dana Oil Service

Incorporating Two-Part Real-Time Pricing Scheme into Distribution System Operation (89)  
Mohammad-Hassan Ghasemifard, Tehran, Mahmud Fotuhi-Firuzabad, Sharif University of Technology, Tehran; Masood Parvania, University of California, Davis; Ali Abbaspour, Sharif University of Technology, Tehran

Power System Optimal Dispatch under Low-carbon Economy with Significant Photovoltaic Generation (46)  
Bin Hu, Suhua Lou, Huazhong University of Science and Technology, Yaowu Wu, Siyu Lu, Huazhong University of Science and Technology

### Session 10: Power Quality

Utility Theory Process for Making a Mitigation Decision on Harmonic Resonance (13)  
Gary Atkinson-Hope, Cape Peninsula University of Technology

Voltage Profile and Power Factor Improvement in PHEV Residential Charging Using a Probabilistic Model in a Smart Grid (13)  
Iman Niazazari, Roohallah Khatami, Hossein Askarian Abyaneh, Ehsan Azad Farsani; Amirkabir University of Technology (Tehran Polytechnic)

Voltage Control with Wind Farms - Current Practice with Type 4 WTG in Canada (4)  
Markus Fischer, Enercon Canada Inc.; Angelo Mendonc, WRD GmbH; Patrice Godin, Enercon Canada Inc.

Bidding Strategy for Participation of Virtual Power Plant in Energy Market Considering Uncertainty of Generation and Market Price (84)  
Mahdi Raoofat, Mohsen Khorasany, Shiraz University

### Session 12 Renewable Energy (III)

A Hybrid Intelligent Framework for Wind Power Forecasting Engine (50)  
Ashraf Ul Haque, Teshmont Consultants LP; Paras Mandal, University of Texas at El Paso; Hashem Nehrir, Montana State University; Ashikur Bhuiya, Robert Baker, Teshmont Consultants LP

A New Dynamic Voltage and Reactive Power Control Method for Distribution Networks with DG Integration (80)  
Lixi Zhang, University of Western Ontario; Sidhu Tarlochan, University of Ontario Institute of Technology

Advancing Green Energy Development to Meet the Africa's Expanding Electricity Needs, (88)  
Stephen Kibiru, Nairobi

Investigation of Solar Irradiance Impact on Electro-thermo-mechanical Characteristics of a Dish-Stirling Engine Power Generation System (60)  
Mehdi Zareian Jahromi, Mohammad Mahdi Hosseini-Biyouk, EE Dept., Amirkabir Univ. of Tech. (Tehran Polytechnic); Roohollah Fadaeinedjad, E and C Eng. Dept., Grad. Univ. of Advanced Technology; Hossein Askarian Abyaneh, EE Dept., Amirkabir Univ. of Tech. (Tehran Polytechnic)

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Lunch: 12:00 – 13:00

13:00 – 14:45

### Session 13 Load Forecasting

Performance Evaluation of New and Advanced Neural Networks for Short Term Load Forecasting (77)  
Syed Talha Mehmoo, Mohamed El-Hawary, Dalhousie University

Principal Component Analysis for Evaluation of Wind Ramp Event Probability (58)  
Jana Heckenbergerova, University Pardubice; Petr Musile, (University of Alberta; Jaroslav Marek, University Pardubice; James Rodway, University of Alberta

Power System Modelling for the Integrated System and for the Industrial System Designates (ISDs); the Alberta Experience (17)  
Rasheek Rifaat, Jacobs Canada; Pamela McLean, AESO

Break: 14:45 – 15:00

15:00 – 16:45

### Session 15 Distribution Systems

Application of Static Var Compensator of Ultra-high Power Electric Arc Furnace for Voltage Drops Compensation in Factory Power Supply System of Metallurgical Enterprise (18)  
Alexander Nikolaev, Gennady Kornilov, Timur Khrumshin, Nosov Magnitogorsk State Technical University; Ibrahim Akcay, Yusuf Gok, CJSC “MMK Metalurji”

Apply STATCOM with a Novel Topology to the Power Sub Grid (72)  
Ming Qi, Stantec T&D, Om Malik, U of C

Benchmarking Industrial Systems Using Energy at Risk and Benchmark Energy Factor Concepts (33)  
Constantin Pitis, BC Hydro; Zaid Al-chalabi, ASA Energy Consulting; Valentin Giurgiu, Schneider Electric

Integration of Distributed Generation in Medium Voltage Distribution Network using Fuzzy Logic Controller for Demand Side Management (71)  
A.R. Kashf, Mohamed El-Hawary, Dalhousie University

13:00 – 14:45

### Session 14 Load Control

An Evaluation of Electric Vehicle Penetration under Demand Response in a Multi-Agent Based Simulation (36)  
Zhanle Wang, Raman Paranjape, University of Regina

Case Study: Using Synchrophasors and Off-the-Shelf Protection and Automation Equipment for Electrical Load-Shedding Services (53)  
Roham Bazarjani, Autopro Automation Consultants Ltd., Roger Baldevia Jr, Schweitzer Engineering Laboratories, Inc.

A Flexible Hardware Platform for Applications in Power Electronics Research and Education (63)  
Julio Viola, Prometeo Project / Universidad Politecnica Salesiana; José Restrepo, Prometeo Project / Universidad Politécnica Salesiana / Universidad Simón Bolívar; Flavio Quizhpi, Universidad Politecnica Salesiana; María Isabel Giménez, José Manuel Alle, Víctor Guzmán, Alexander Buen, Universidad Simón Bolívar

UPS AIR (56)  
John Hodson, PSAMS

Break: 14:45 – 15:00

15:00 – 16:45

### Session 16 Micro-grids

Experimental Validation of Wireless Load Sharing Method for Isolated AC Microgrids (48)  
Cristina Guzman, Kodjo Agbossou, Alben Cardenas, Université du Québec à Trois-Rivières

Negative Sequence Injection for Islanding Detection of Grid-interconnected Distributed Generators (87)  
Michel E. AlSharidah, Nabil Ahmed, Abdulrahman Al-Othman, College of Technological Studies, PAAET

Optimal Sizing of Battery Energy Storage Systems for Microgrids (78)  
Hisham Alharbi, Kankar Bhattacharya, University of Waterloo

Combined Heat & Power (55)  
John Hodson, PSAMS, Hartley Harris, Catch Engineering

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