

Wednesday, November 12, 2014**08:00 – 17:00 Tutorials by special registration****18:00 – 20:00 Reception: All EPEC 2014 Registrants****Thursday, November 13, 2014****08:00 Opening Session: Bill Kennedy****Plenary speaker Mr. John McDonald**

IEEE PES Distinguished Lecturer, Director, Technical Strategy and Policy Development, GE Digital Energy

“Smart Grid Interoperability as the key element for Partnership between Industrial Users and Power Providers”**09:00 – 10:30 Session 1 Protection (I)****Session Chair: Dalibor Kladar****09:00 Securing IEC 60870-5-104 using Deep Packet Inspection Technology (38)**

Eric Byres, Dennis Mantz, Ron Brash, Tofino Security, a Belden Brand

09:23 The Duo-Domains of IEC 61850 (81)

Dustin Tessier, Tesco

09:45 The Resistance Test is Not Enough (51)

Carl Moller, CANA High Voltage Ltd.

10:08 Performance of Turbo-generator 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

09:00 – 10:30 Session 2 Power System Operation**Session Chair: Dale Tardiff****09:00 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

09:23 Power System Stability Monitoring using Synchronized Phasor Measurements (32)

Saikat Chakrabarti, Indian Institute of Technology, Kanpur India, Benjamin Jeyasurya, Memorial University of Newfoundland

09:45 Stability Assessment of Turbine-Generators Connected to Relatively Weak Areas (47)

Ralph Liu, Mahmoud (Maz) Mazadi, Liuzhong Shi, Mohamed Mobarak, AESO

10:08 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

10:30 – 10:45 Break**10:45 – 12:15 Session 3 Protection (II)****Session Chair: Ronnie Minhaz****10:45 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

11:08 Impact of Generator Distance Phase Backup Protection on Generator Over-excitation Thermal Capability during System Disturbances (31)

Mohamed Elsamahy, Department of Electrical Power and Machines, The Higher Institute of Engineering, Al Shorouk Academy, Al Shorouk, Egypt

11:30 PMU Based System Protection Scheme (57)

Matin Rahmatian, William Dunford, The University of British Columbia; Ali Moshref, BBA Incorporation

11:53 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

10:45 – 12:15 Session 4 Planning**Session Chair: Tim Driscoll****10:45 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

**11:08 A Multi-State Model for Renewable Resources in
Distribution Systems Planning (12)**

Majed Alotaibi, Magdy Salama, University of Waterloo

**11:30 Application of Genetic Algorithm in Distribution
System Planning Considering Voltage Sags (34)**

Edwin Garcia, University of Antioquia; Carlos Garcia,
State Company of Medellin

**11:53 Accommodating High Levels of Renewable
Generation in Remote Microgrids under Uncertainty
(35)**

Waliel Alharbi, Kankar Bhattacharya, University of
Waterloo

13:15 – 15:00 Session 5 Renewable Energy (I)

Session Chair: Lawrence Whitby

**13: 15 Investigating the Characteristics and Effects of
FCLs on Distribution Grids with Wind Generation (64)**

Somayah Farhadkhani, Jacques Lobry, Francois Vallee,
Department of Electrical Power Engineering University
of Mons, Mons, Belgium; Olgan Durieux, ORES
Distribution Grid Operator Technical Department,
Belgium

**13:42 Most Influential Variables for Solar Radiation
Forecasting Using Artificial Neural Networks (74)**

Bader Alluhaidah, Shadi Shehadeh, Mohamed El-
Hawary, Dalhousie University

**14:08 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

**14:34 Quantifying System Adequacy Benefit of Wind
Power Diversity (76)**

Rajesh Karki, University of Saskatchewan, Dinesh
Dhungana, Saskpower

13:15 – 15:00 Session 6 Control

Session Chair: Ahsan Upal

**13:15 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

**13:42 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

**14:08 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

**14:34 Multidimensional Optimal Control of wind
Turbine Generator (75)**

Abdulrazig Alarabi, Mohamed El-Hawary, Dalhousie
University

15:00 – 15:15 Break

15:15 – 17:00 Session 7 Renewable Energy (II)

Session Chair: Alexander Petroianu

**15:15 Assessment of Disruptive Innovation in Emerging
Energy Technologies (41)**

Frederick P. Adams, Megan Moore, Blair Bromley,
Atomic Energy Canada Ltd.

**15:45 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.

**16:15 Inclusion of Wind Generation Modeling into the
Conventional Generation Adequacy Evaluation (86)**

Abdulaziz Almutairi, Mohamed Ahmed, Magdy Salama,
University of Waterloo

15:15 – 17:00 Session 8 CI Applications

Session Chair: Rasheek Rifaat

15:15 Optimal Filter Placement and Sizing using Ant Colony Optimization in Electrical Distribution System (69)

Fawaz Alhaddad, Mohamed El-Hawary, Dalhousie University

15:45 Optimal power flow by Black Hole Optimization Algorithm (70)

Zakareya Hassan, Mohamed El-Hawary, Dalhousie University

16:15 Renewable Energy System Design by Artificial Neural Network Simulation Approach (15)

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

18:00 for 18:30 Conference Dinner

Speaker: Mr. Philip Jones, Motivational Speaker

“How to fit a Heart Attack into Your Busy Schedule”

Friday, November 14, 2014

**08:30 – 10:15 Session 9 WORKSHOP:
Disruptive Innovation in Emerging Energy Technologies (28)**

Frederick P. Adams, Megan Moore, Atomic Energy Canada Ltd.

**08:30 – 10:15 Session 10: Theory and Practice
Session Chair: Fred Ritter**

08:30 Mathematical representations of electrical power: vector or complex number? Neither! (62)

Alexander Petroianu, University of Cape Town/ University of Calgary

08:57 11:30 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

09:23 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.

09:49 Utility Theory Process for Making a Mitigation Decision on Harmonic Resonance (13)

Gary Atkinson-Hope, Cape Peninsula University of Technology

10:15 – 10:30 Break

10:30 – 12:00 Session 11 Workshop (continued)

**10:30 – 12:00 Session 12 Renewable Energy (III)
Session Chair: Shan Pandher**

10:30 A Hybrid Intelligent Framework for Wind Power Forecasting Engine (50)

Ashraf UI Haque, Teshmont Consultants LP; Paras Mandal, University of Texas at El Paso; Hashem Nehrir, Montana State University; Ashikur Bhuiya, Robert Baker, Teshmont Consultants LP

10:53 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)

11:15 Combined Heat and Power (55)

John Hodson, PSAMS; Hartley Harris, Catch Engineering

11:37 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)

13:00 – 14:45 Session 13 Load Forecasting

Session chair: Ronnie Minhaz

13:00 Performance Evaluation of New and Advanced Neural Networks for Short Term Load Forecasting (77)

Syed Talha Mehmoo, Mohamed El-Hawary, Dalhousie University

13:27 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

13:53 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

14:19 Aggregate Load Forecast with Payback Model of the Electric Water Heaters for a Direct Load Control Program

Mostafa Shad, Rachid Erroissi, Christopher P. Diduch, Mary E. Kaye, Liuchen Chang, University of New Brunswick

13:00 – 14:45 Session 14 Load Control

Session Chair: Ron Zieber

13:00 An Evaluation of Electric Vehicle Penetration under Demand Response in a Multi-Agent Based Simulation (36)

Zhanle Wang, Raman Paranjape, University of Regina

13:27 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.

14: 53 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

14:19 UPS AIR (56)

John Hodson, PSAMS

14:45 – 15:00 Break**15:00 – 16:45 Session 15 Distribution Systems**

Session Chair: Doug Brooks

15:00 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”

15:27 Apply STATCOM with a Novel Topology to the Power Sub Grid (72)

Ming Qi, Stantec T&D, Om Malik, U of C

15:53 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

16:19 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

15:00 – 16:45 Session 16 Micro-grids

Session Chair: Ahsan Upal

15:00 Experimental Validation of Wireless Load Sharing Method for Isolated AC Microgrids (48)

Cristina Guzman, Kodjo Agbossou, Alben Cardenas, Université du Québec à Trois-Rivières

15:27 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

15:53 Optimal Sizing of Battery Energy Storage Systems for Microgrids (78)

Hisham Alharbi, Kankar Bhattacharya, University of Waterloo

16:19 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