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Technical Program Detail

Wednesday, August 21, 2013 09:00 – 17:00

Tutorial I 09:00 to 12:00 — Room: Sable A

VSC MMC Modeling - Randy Wachal

Abstract:
HVDC VSC technology has developed extremely quickly and offers many attractive alternatives over the more mature LCC HVDC technology. This workshop will discuss VSC converter theory, VSC system configuration, the operation of VSC technology, as well as a comparison of VSC and LCC HVDC technologies. There is significant operational flexibility of VSC convertors control systems. VSC Control methods are introduced. The simulation of VSC MMC technology presents several EMT simulation challenges. The current status of simulation and model development is presented. A sample of simulation results discussing the unique issues for start-up and Dc line recovery for VSC systems is introduced.

Presenter Bio:
Randy Wachal graduated from the University of Manitoba with BSc EE in 1981. Randy joined Manitoba Hydro where he worked for 13 years on the Nelson River HVDC System as a Control Design and Commissioning Engineer. In 1995, Randy joined the Manitoba HVDC Research Centre where he is currently the Engineering Systems Manager. Randy has been involved in specification, PSCAD simulation, commissioning and lifetime investigation studies on a number of HVDC and SVC systems. Randy is a professional engineer registered in Manitoba, a senior member of IEEE, a member of CIGRE, and currently CIGRE WG Conveyor of B4-57 on DC Grid HVDC VSC Modeling.

Tutorial III 14:00 to 17:00 — Room: Sable A

Transmission Lines – Electricity's Highways – Bill Kennedy

Abstract:
Electric transmission lines are a vital component of every electric power system. These lines connect load to generation. Transmission lines have different voltages and various lengths. Transmission lines are challenges for civil, mechanical and electrical engineers. This seminar will examine transmission lines from the electrical point of view. The approach taken uses a minimum of mathematics and emphasis is placed on the physical aspects of transmission lines.
Topics to be covered:

- Surge Impedance Loading (SIL)
- Visualizing how a transmission line works using the St. Clair Curve
- Picking the correct voltage using the St Clair Curve
- Understanding reactive power flow on a transmission line
- Selecting the right conductor
- Calculating the voltage and angle across a transmission line
- Rating of transmission lines
- Conductor Impedances
- Trip & Reclose
- Illustrating the reliability of transmission lines
- Developing an economic conductor evaluation
- Using shortcut methods

By the end of the seminar the attendee will come away with a good understanding of the electrical properties of transmission lines

Presenter Bio:

W.O. (Bill) Kennedy is Principal of b7kennedy & Associates Inc., a consulting firm based in Calgary specializing in power system engineering. He has over 40 years' experience in the power system industry. He has appeared as an expert witness before the Alberta Utilities Commission and its predecessor board. He has worked in nine of Canada's ten provinces. Some of his Canadian experience includes the Nelson River HVDC project in Manitoba, transmission planning in Saskatchewan, generator additions to industrial facilities in British Columbia and extensive interconnection work in Alberta. His overseas experience includes 500 kV transmission in Pakistan, 400 kV transmission in Iran, 138 kV transmission in Peru and power supply to a pulp mill in the former Yugoslavia.

He is a registered Professional Engineer in Alberta, Saskatchewan, Manitoba and British Columbia. Active in IEEE, he is a Senior Member. In 1998, he made a Fellow of the Engineering Institute of Canada.
He can be reached during weekdays at this office. During weekends, he's usually skiing in the mountains in the Winter and biking the Summer.
His website is: www.b7kennedy.com

Tutorial IV 14:00 to 17:00 **Room: Sable B**

Advanced Power Electronics and Motor Drives Applications for Future Transportation Electrification - Sheldon S. Williamson

Abstract:

Shortage of petroleum is considered as one of the most critical worldwide issues today. At the same time, as of today, car owners in Canada and North America, in general, spend more money at the gas station than they have done ever before. The most practical solution to the oil crisis problems lies in commercially available electric and plug-in hybrid electric vehicles (EVs and PHEVs). EVs and PHEVs present a significant opportunity to reduce greenhouse gases and dependence on foreign oil. Major car companies have already developed exciting new EVs, such as the Chevy Volt and the Nissan Leaf. The Tesla Roadster is a brand new product in the market as a result of a successful start-up company project. Finally, Toyota most recently developed the plug-in model of the popular Prius. Thus, it is clear that new EVs are being introduced at an increasing rate.

In order to convince customers to buy EVs, urban communities will need to enable the necessary large-scale charging infrastructure. An EV can reduce fuel consumption by charging its battery from the utility grid. The typical battery charging time for EVs and PHEVs is 6-8 hours, if charged slowly at home. However, if the charging is required to be done at a faster rate, it can be performed in less than 20 minutes, at a charge station (instead of a gas station). However, the required charging energy will have a major impact on the utility. Alternatively, green renewable energy sources, such as photovoltaics (PV) and wind energy could be used to provide the necessary charging energy at a cleaner and cheaper rate. Such energy sources can also be installed at home or in urban buildings in large cities, thereby allowing for battery charging during work hours. This lecture will start-off by presenting the structure and basic design aspects of EVs and PHEVs. Future trends in EV manufacturing will also be presented. Integration of EVs with green, renewable energy sources will be presented, along with an introduction to the design of such systems. Various charging scenarios for EV batteries will be presented, when charging at home, at work, or in between routes. Future advanced battery charging infrastructures, such as from combined PV and grid sources, as well as inductive surface charging infrastructures will be presented. A brief design for an inductive surface charging infrastructure for an urban building scenario will be presented. Finally, Concordia University's efforts in research and teaching with regards to integration of renewable energy and electric vehicles will also be presented.

Presenter Bio:

Sheldon S. Williamson (S'01–M'06) received his Bachelor of Engineering (B.E.) degree in Electrical Engineering with high distinction from University of Mumbai, Mumbai, India, in 1999. He received the Master of Science (M.S.) degree in 2002, and the Doctor of Philosophy (Ph.D.) degree (with Honors) in 2006, both in Electrical Engineering, from the Illinois Institute of Technology, Chicago, IL, specializing in automotive power electronics and motor drives, at the Grainger Power Electronics and Motor Drives Laboratory. Dr. Williamson is an Associate Professor within the Department of Electrical and Computer Engineering, at Concordia University, Montreal, Canada, where he has been working since June 2006. His main research interests include the study and analysis of electric drive trains for electric, hybrid electric, plug-in hybrid electric, and fuel cell vehicles. His research interests also include modeling, analysis, design, and control of power electronic converters and motor drives for land, sea, air, and space vehicles, as well as the power electronic interface and control of renewable energy systems. Dr. Williamson has offered numerous conference tutorials, lectures, and short courses in the areas of Automotive Power Electronics and Motor Drives. He is the principal author/co-author of over 150 journal and conference papers. He is also the author of 4 chapters in the book entitled, Vehicular Electric Power Systems (Marcel Dekker, 2003). He is also the author of 2 chapters in the book entitled, Energy Efficient Electric Motors (CRC Press, 2004). In addition, Dr. Williamson has been selected as the General Chair for the IEEE Transportation Electrification Conference, to be held in Detroit, Michigan, in June 2014. He also served as the Technical Program Chair for various conferences, including the Annual Conference of the IEEE Industrial Electronics Society (IEEE IECON 2012), the IEEE Vehicle Power and Propulsion Conference (2011), and the IEEE Canada Electrical Power and Energy Conference (2009). Dr. Williamson also served as the Project Coordination and Awards Chair at the 2007 IEEE Canada Electrical Power Conference, Montreal, Canada. He was the Conference Secretary for the 2005 IEEE Vehicle Power and Propulsion Conference, Chicago, Illinois.

Dr. Williamson is also the beneficiary of numerous awards and recognitions. He was the recipient of the prestigious "Paper of the Year" award, for the year 2006, in the field of Automotive Power Electronics, from the IEEE Vehicular Technology Society (IEEE VTS). In addition, he also received the overall "Best Paper" award at the IEEE PELS and VTS Co-sponsored Vehicle Power and Propulsion Conference, in Sept. 2007. He was awarded the "Best Paper" award at the IEEE Canada Electrical Power and Energy Conference, in Halifax, Nova Scotia, Canada, in Aug. 2010. He was awarded the prestigious Sigma Xi/IIT Award for Excellence in University Research, for the academic year 2005-2006. In 2006, he also received the "Best Research Student" award, Ph.D. category, within the ECE Department, at the Illinois Institute of Technology, Chicago. Dr. Williamson is a member of the IEEE. He currently serves as a Distinguished Lecturer of the IEEE Vehicular Technology Society (VTS). He also serves as Associate Editor for the IEEE

Transactions on Industrial Electronics and the IEEE Transactions on Power Electronics. He also serves as the IEEE Industry Applications Society (IAS) Chapter Chair for the IEEE Montreal section. He is a member of the IEEE PELS, IES, and VTS.

Session: Workshop **Invited Speaker: James N. Riess, PE, Immediate Past IEEE Region 4 Director** **Chair: Dr. Ferial El-Hawary**	**Room: Sable D**
14:00 –17:00	***IEEE After Graduation***

Thursday, August 22, 2013 09:00 – 12:00

9:00	***Opening Ceremony***	**Room: Sable**
Keynote Speaker **Rob Bennett, Executive VP and COO, Emera Inc.**		**Room: Sable**

10:20 – 12:00	***Oral Sessions***
Session TM1: Power Quality I **Chair:** Petr Musilek/ Walid Morsi	**Room: Sable A**
10:20	**Prediction of PV Power Quality: Total Harmonic Distortion of Current.** Petr Musilek (University of Alberta); James Rodway (University of Alberta); Stanislav Misak (VSB-Technical University of Ostrava); Lukas Prokop (VSB-Technical University of Ostrava) млл
10:40	**Application of PSO and Fuzzy Logic for Underfrequency Load Shedding.** Walid Morsi (University of Ontario Institute of Technology); Matt Gray (UOIT) уп
11:00	**Time-varying Power Quality in Unbalanced Three-phase Systems .** Walid Morsi (University of Ontario Institute of Technology); Matt Gray (UOIT); Saurabh Talwar (UOIT); Taufique Zafar (UOIT) уу
11:20	**Investigation on the System Grounding Types for Low Voltage Direct Current Systems.** Xiaoyu Wang (Carleton Univeristy); Lulu Li (Chongqing University; China); Jing Yong (Chongqing University; China); Liqiang Zeng (Chongqing University;China) оун
11:40	**CDM Application on Power System as a Load Frequency Controller.** Yaser Soliman Qudaih (Kyushu Institute of Technology); Yasunori Mitani (Kyushu Institute of Technology); Michael Bernard (Kyushu Institute of Technology); Tarek Mohamed (Aswan University) тм
Session TM2: Computational Methods in Power Systems I **Chair:** U. D. Annakkage/Hung Huynh	**Room: Sable B**
10:20	**Investigation of the Applicability of Lyapunov Exponents for Transient Stability Assessment.** Darshana Wadduwage (Univeristy of Manitoba); Janath Geeganage (University of Manitoba); Udaya Annakkage (University of Manitoba); Christine Wu (University of Manitoba) нсф
10:40	**AMPds: A Public Dataset for Load Disaggregation and Eco-Feedback Research.** Stephen Makonin (Simon Fraser University); Fred Popowich (Simon Fraser University); Lyn Bartram (Simon Fraser University); Bob Gill (British Columbia Institute of Technology); Ivan Bajic (Simon Fraser University) ннп
11:00	**A Two-Stage Method for Assessment of Voltage Stability in Power System with Renewable Energy.** Yang Wang (Tianjin University); Hsiao-Dong Chiang (School of Electrical and Computer Engineering; Cornell University); Tao Wang (School of Electrical and Computer Engineering; Cornell University) мпл
11:20	**Vulnerability Analysis of Power Grid Network against Failures by State Classification .** Akansha Singh (International Institute Of Information Technology; Bangalore); Jyotsna Bapat (IIIT-B); Debabrata Das (IIIT-B) мрн

Session TM3: Energy Conservation and Efficiency I **Room: Sable C** **Chair:** Geza Joos/Phil Zinck	
10:20	**Dispatch Techniques for Canadian Remote Communities with Renewable Sources.** Juan Clavier (McGill University); Michael Ross (Mcgill University); Geza Joos (Mcgill University) мру
10:40	**Voltage Stability and Power Quality Issues of Wind Farm with Series Compensation.** Md. Shihanur Rahman (UNSW Canberra); Tahsin Fahima Orchi (UNSW Canberra); Hemanshu Pota (UNSW Canberra); Md. Jahangir Hossain (Griffith University) опп
11:00	**Impact of V2G on Real-Time Adaptive Volt/VAr Optimization of Distribution Networks .** Moein Manbachi (SFU); Hassan Farhangi (British Columbia Institute of Technology); Ali Palizban (British Columbia Institute of Technology); Siamak Arzanpour (Simon Fraser University) с
11:20	**Reduced Model and Control of Diode-Interfaced Offshore Wind Farms with DC Power Systems.** Shadi chuangpishit (uoft); Ahmadreza Tabesh (Isfahan University of Technology) ну
11:40	**Distributed Generation Grid Connection Experiences Minimizing High Voltage Equipments .** Aidan Foss (ANF Energy Solutions Inc.); Kalle Leppik (ANF Energy Solutions Inc.) но
Session TM4: Energy Storage I **Room: Sable D** **Chair:** Petr Musilek/Perry Mason	
10:20	**Managing the Energy-for-Data Exchange in Remote Monitoring Systems.** Petr Musilek (University of Alberta); Asher Watts (University of Alberta); Loren Wyard-Scott (University of Alberta) мут
10:40	**Optimization of Compressed Air Storage's Volume for a Stand-Alone Wind-Diesel Hybrid System .** Adel Merabet (Saint Mary's University); Hussein IBRAHIM (TechnoCentre éolien); Ali Bourji (Lebanese University); Mazen Ghandour (Lebanese University) нрр
11:00	**Batteries-Supercapacitors Storage Systems for a Mobile Hybrid Renewable Energy System.** Daniella Esperanza Pacheco Catalán (Centro de Investigación Científica De Yucatán; A. C.); Manuel Israel Flota Bañuelos (Universidad Autónoma de Yucatán); José Manuel Sandoval (Centro de Investigación Científica de Yucatán); Ysmael Verde (Instituto Tecnológico de Cancún); María de Jesus Espinosa (Centro de Investigación Científica de Yucatán A.C.) ооп
11:20	**An Optimal Battery Energy Storage Charge/Discharge Method.** Stephen Cialdea (Worcester Polytechnic Institute); John Orr (Worcester Polytechnic Institute); Alexander Emanuel (Worcester Polytechnic Institute); Tan Zhang (Worcester Polytechnic Institute) м
11:40	**The Influence of Parallel Capacitor to Output Voltage in High-Frequency ESP Power Supply.** Kexin Zhang (Harbin Institute of Tec;Harbin Institute of Technology) онп

Thursday, August 22, 2013 14:00 – 15:40

14:00 – 15:40	***Oral Sessions***

Session TP1: Power Quality II **Room: Sable A** **Chair: Xiaoyu Wang /Walid Morsi**	
14:00	**Harmonic Analysis of Power System with Wind Generations and Plug-in Electric Vehicles.** Ze Zhang (Tianjin University); Hsiao-Dong Chiang (School of Electrical and Computer Engineering; Cornell University); Tao Wang (School of Electrical and Computer Engineering; Cornell University) моп
14:20	**Induction Motor Interactions after Voltage Sags.** Xiaoyu Wang (Carleton Univeristy); Zhijun Wang (Shandong University; China) отт
14:40	**Performance of a Three-Level H-bridge Series Voltage Compensation System under Multiple Loop Control Strategy.** John E. Quaicoe (Memorial University of Newfoundland); Amir Tahavorgar (Memorial University of Newfoundland) плм
15:00	**Advanced Power Quality Laboratory.** Thomas Marshall (McMaster University); Nafia Al-Mutawaly (McMaster University / Mohawk College) тс
15:20	**Low and High Order Harmonic Emission Quantification of Plug-in Hybrid and Battery Electric Vehicles .** Walid Morsi (University of Ontario Institute of Technology); Matt Gray (UOIT); Kassem Jamal (UOIT) ноу
Session TP2: Computational Methods in Power Systems II **Room: Sable B** **Chair: Benjamin Jeyasurya/Jaclyn Monaghan**	
14:00	**Comparison of Biogeography Based Optimization and Genetic Algorithm for Power System Damping-Based Controllers Design.** Ehab El-Saadany (University of Waterloo); Magdy Salama (University of Waterloo); Amr Said (U Waterloo) нлл
14:20	**Determination of Power Transfer Capability by Incremental Changes.** MUTLU YILMAZ (); Bulent Bilir (Northeastern University) нтр
14:40	**Dynamic State Estimation in Power Systems Using Kalman Filters.** Benjamin Jeyasurya (Memorial University of Newfoundland); Hamed Tebianian (Memorial University) офс
15:00	**Measurement-Based Analysis of Power System Small Signal Stability.** Dan Lin (Memorial University of Newfoundland); Benjamin Jeyasurya (Memorial University of Newfoundland) bк!
Session TP3: Energy Conservation and Efficiency II **Room: Sable C** **Chair: Adel Merabet/Bill Kennedy**	
14:00	**Open-Loop Maximum Power Point Tracking Strategy for Marine Current Turbines Based on Resource Prediction.** Francisco Paz (University of British Columbia); Martin Ordonez (University of British Columbia) олр
14:20	**DSP-Based SVM Generation Algorithm For DFIM.** Wamkeue René (UQAT); Jean-Jacques Beaudoin (Université du Québec en Abitibi-Témiscamingue); Djilali kairous (uhbc) мфс
14:40	**Modeling and Simulation of a Novel Small-Scale Compressed Air Hybrid System for Stand-Alone Off-Grid Applications.** Adel Merabet (Saint Mary's University); Hussein IBRAHIM (TechnoCentre éolien); Adrian Ilinca (Université du Québec à Rimouski); Jean Perron (Université du Québec à Chicoutimi) нпу

15:00	**Control System Simulation for Stand-Alone Hybrid Wind Diesel System.** Adel Merabet (Saint Mary's University); Hussein IBRAHIM (TechnoCentre éolien); Rachid Beguenane (Royal Military College); Jogendra Thongam (Royal Military College); Vigneshwaran Rajasekaran (Saint Mary's University; Halifax; Canada) нмп
15:20	**Modeling Solar Photovoltaic Cell and Simulated Performance Analysis of a 250W PV Module.** Adel Merabet (Saint Mary's University); Hussein IBRAHIM (TechnoCentre éolien); Rachid Beguenane (Royal Military College); Md. Aminul Islam (Saint Mary's University) нут
Session TP4: Energy Storage II **Room: Sable D** **Chair: Alexander Emmanuel/Baron Young**	
14:00	**Electric Energy Cost Reduction by Shifting Energy Purchases from On-Peak Times.** Stephen Cialdea (Worcester Polytechnic Institute); John Orr (Worcester Polytechnic Institute); Alexander Emanuel (Worcester Polytechnic Institute); Tan Zhang (Worcester Polytechnic Institute) му
14:20	**Demand Response and Energy Storage in MV Islanded Microgrids for High Penetration of Renewables .** Walied Alharbi (University of Waterloo); Kankar Bhattacharya (University of Waterloo) ммл
14:40	**Grid Connected Dispatch-able Operating Modes for Hydrogen Production from Renewable Energy Sources .** khaled Nigim (Lambton College); Joshua McQueen (Lambton College) сс
15:00	**Use of Energy Storage for Belgian Power Network.** Brecht Zwaenepoel (); Mohammad Moradzadeh (UGent); Lieven Vandevelde (UGent) отм

Thursday, August 22, 2013 16:00 – 17:40

16:00 – 17:40	***Oral Sessions***
Session TE1: Distribution Systems **Room: Sable A** **Chair: D. Bouchard/Jaclyn Monaghan**	
16:00	**Management of a Smart Grid with Controllable Delivery of Discrete Levels of Energy.** Roberto Rojas-Cessa (New Jersey Institute of Technology); Yifei Xu (New Jersey Institute of Technology); Haim Grebel (New Jersey Institute of Technology) ону
16:20	**Trends in Naval Ship Propulsion Motor Technology.** Aime Francis Okou (Royal Military College of Canada); Mohammed Tarbouchi (Royal Military College of Canada); Rachid Beguenane (Royal Military College); Jogendra Singh Thongam (Royal Military College of Canada); Derrick Bouchard (Royal Military College of Canada) мфм
16:40	**Advanced Power System Laboratory.** Nafia Al-Mutawaly (McMaster University / Mohawk College); Jasmeet Bhattal (McMaster University); Gobi Jayakumar (McMaster University); Muhammad Sarwar (McMaster University) ул
17:00	**A New Selection Criteria for Combined Optimal Allocation of RESs based DGs in Restructured Electricity Market.** Amit Kumar Singh (IIT Patna; India) bк!

17:20	**Future Distribution Feeder Protection using Directional Overcurrent Elements.** John Kumm (POWER Engineers); Doug Jones (POWER Engineers) bк!
Session TE2: Building Energy Systems **Room: Sable B** **Chair: Adel Merabet/Qinmin Yang**	
16:00	**Model Predictive Control of Chilled Water Temperature for Centralized HVAC Systems.** Qinmin Yang (); Jianhua Zhu (Zhejiang University); Jiangang Lu (Zhejiang University) орл
16:20	**Design and Implementation of a Web-based Energy Management Application for Smart Buildings.** Yunfei Qu (Tianjin University); Hongjie Wang (Tianjin University); Shauming Lun (Intelicis Corporation); Hsiao-Dong Chiang (School of Electrical and Computer Engineering; Cornell University); Tao Wang (School of Electrical and Computer Engineering; Cornell University) мну
16:40	**Predictive Algorithm for System Architecture of the Sustainable Energy System for Buildings.** Vladimir Grebenyuk (Ascent Systems Technologies) см
17:00	**Demand Request Dispatch Approach for Electric Distribution Systems.** Vinay Sharma (London Hydro Inc.); Luke Seewald (London Hydro Inc.) ро
Session TE3: Energy Conservation and Efficiency III **Room: Sable C** **Chair: Reza Iravani/Phil Zinck**	
16:00	**Control System for Hybrid Wind Diesel Based Microgrid.** Adel Merabet (Saint Mary's University); Hussein IBRAHIM (TechnoCentre éolien); Vigneshwaran Rajasekaran (Saint mary's University); Rachid Beguenane (Royal Military College); Jogendra Thongam (Royal Military College) мпс
16:20	**A Review of the Impacts of Multiple Wind Power Plants on Large Power Systems Dynamics.** Ahmed El-Klhy (U Toronto); Reza Iravani (U Toronto) мсп
16:40	**Half-Bridge Based Multilevel Inverter Generating Higher Voltage and Power.** kamal al-haddad (École de technologie supérieure); Hani Vahedi (ETS) нфф
17:00	**Flexible Programming in Connections Between Supercapacitors in a Module to Maximizing the Energy Discharge Time.** María Guadalupe Reveles Miranda (Centro de Investigación Científica de Yucatán); Daniella Esperanza Pacheco Catalán (Centro de Investigación Científica De Yucatán; A. C.); Manuel Israel Flota Bañuelos (Universidad Autónoma de Yucatán) bк!
17:20	**Diesel Consumption in a High Penetration Remote Hybrid Power System with a Pumped Hydro and Battery Storage.** Tariq Iqbal (); Md. Rahimul Asif (Memorial University of Newfoundland) ммс
Session TE4: Transmission Systems **Room: Sable D** **Chair: Roger Wiget/Baron Young**	
16:00	**Power Grid Protection against Geomagnetic Disturbances (GMD).** Fred Faxvog (University of Minnesota) ОММ
16:20	**Wide-area Control for Damping Inter-area Oscillations: A Comprehensive Review.** Mohamed Younis (University of Toronto); Reza Iravani (University of Toronto) мтл
16:40	**DC Optimal Power Flow Including HVDC Grids.** Roger Wiget (ETH Zurich); Göran Andersson (ETH Zurich) пм

17:00	**COMPARISON OF BIO-FUELS USED IN CO-GENERATION BASED SUGAR INDUSTRY OF PUNJAB: A CASE STUDY.** Rubalpreet Saini (Guru Nanak Dev Engineering College) opp
17:20	**Optimal Partitioning of Power Networks and Locating Pilot Buses proposed for Voltage Regulation.** Hasan Mehrjerdi (IREQ) bk!

Friday, August 23, 2013 09:15 – 11:30

9:15	**Welcome:** Dr. Mo El-Hawary, Dalhousie University
09:30-11:30 **Room: Sable** **Marine Energy Panel: Electric Power Integration Challenges and Solutions for Marine Energy** **Panel Chair: Ghanashyam Ranjitkar, Natural Resources Canada**	
Panel members	• Melanie Nadeau - Emera • Tony Wright – Fundy Ocean Research Centre for Energy • Greg Trowse – Fundy Tidal Inc. • Aaron MacNeil– Dalhousie University
Marine Energy is one of the major potential sources of renewable electricity power for the near future. Countries like Canada, USA and Europe have significant marine energy potential and they have made significant investment to develop the marine energy industry. This industry has been progressing very quickly in last 5 to 10 years, and there are number of demonstration projects utilizing wave, tidal and river current resources. The projects have been, as small as, 5 kW to tens of MWs being planned in North America and Europe. Much of the focus has been developing the devices or the energy converters that would be efficient, cost effective and reliable. The energy converters are converging into select number of concepts that are likely to be industry standard, similar as in the wind energy. It does seem that time is appropriate to address the need for transmission of electric power from the marine energy converters that are located off-shore, normally 100's of meters or even kilometers from the shore. The cost of subsea cables used for transmission is high. There are number of technical, economical and reliability challenges to transmit power for the devices that are installed off-shore. This panel will provide insight into interconnecting these devices to the local transmission and distribution network.	

Friday, August 23, 2013 14:00 – 15:40

14:00 – 15:40	***Oral Sessions***
Session FP1: Smart Grid including HVDC and FACTS I **Room: Sable A** **Chair: Wahab Almuhtadi/Hung Huynh**	
14:00	**Phasor-Assisted Automated Topology Processing for State Estimators.** Luigi Vanfretti (KTH Royal Institute of Technology; Electric Power Systems Department); Mostafa Farrokhabadi (University of Waterloo) oo

14:20	**An Intelligent Multi-Agent Approach to Enhance the Transient Stability of a Smart Power Grid.** Md. Shihanur Rahman (UNSW Canberra); Tahsin Fahima Orchi (UNSW Canberra); Hemanshu Pota (UNSW Canberra) ooy
14:40	**Application of Multi-Agent Control to Multi-Terminal HVDC Systems.** mohammad nazari (KTH Royal Institute of Technology; Electric Power Systems Department); mehrdad Ghandhari (KTH Royal Institute of Technology) нфо
15:00	**Co-Simulation of Real-Time Decentralized Vehicle/Grid (RT-DVG) Coordination Scheme for E-mobility within Nanogrids.** Samah Mansour (McGill University); Intissar Harrabi (INRS-EMT); Geza Joos (McGill); Martin Maier (INRS-EMT) пт
15:20	**Optimizing Wireless Performance of Current Metering and Consumption Control in Commercial Buildings.** Wahab Almuhtadi (;); Wahab Almuhtadi (Algonquin College); Kelvert Ballantyne (Algonquin College); Shilian Zhao (Algonquin College); Natalia Gorbenko (Algonquin College); Denis Gallant (Triacta Power Technologies; Inc.) орф
Session FP 2: Integrated Energy System Planning I **Room: Sable B** **Chair: Ahmed Cheriti/Phil Zinck**	
14:00	**A Game Theoretic Framework for DG Optimal Contract Pricing .** Ashkan Sadeghi Mobarakeh (University); Abbas Rajabi Ghahnavieh () bк!
14:20	**A real time energy management for electrical vehicle using combination of rule-based and ECMS.** Hanane HEMI (University of Moncton); jamel ghouili (); ahmed cheriti () млп
14:40	**Hybrid SVM & ARMAX Based Mid-term Electricity Market Clearing Price Forecasting.** Xing Yan (University of Saskatchewan); Nurul Chowdhury (University of Saskatchewan) офм
15:00	**A hybrid Genetic Radial Basis Function Network with Fuzzy Corrector for Short Term Load Forecasting.** Ehab El-Saadany (University of Waterloo); Wael Ghareeb (University of Waterloo) нмф
15:20	**Microgrid Level Competitive Market Using Dynamic Matching.** Swapan Sikdar (Queen's Univeristy); Karen Rudie (Dept. of Electrical and Computer Engg.; Queen's University) мтс
Session FP 3: Energy Conservation and Efficiency IV **Room: Sable C** **Chair: Adel Merabet/Perry Mason**	
14:00	Novel Method of Pre-determining Induction Machine Parameters and Energetic Efficiency . Adel Merabet (Saint Mary's University); Valentin Giurgiu (;); Voicu Groza (University of Ottawa); Constantin Pitis (BC Hydro- Power Smart Engineering) мн
14:20	Comparison of Bio-Fuels Used In Co-Generation Based Sugar Industry of Punjab: A Case Study. Charan Preet Singh Gill (Guru Nanak Dev Engineering College; Gill Road; Gill Park; Ludhiana; Punjab; India); Rubalpreet Saini (Guru Nanak Dev Engineering College); Harmeet Singh Gill (Guru Nanak Dev Engineering College; Ludhiana;) оут
14:40	Electric Water Heaters Control Strategy for Providing Regulation Services and Load Leveling in Electric Power Systems. Simon Ayoub (University of Sherbrooke) оср
15:00	A Revised Incremental Conductance MPPT Algorithm for Solar PV Generation Systems. Xiaoyu Wang (Brookhaven National Laboratory); Meng Yue (Brookhaven National Laboratory) bк!

Session FP 4: Workshop Invited Speaker: Moni Islam, IEEE Standard Association Chair: Dr. Ferial El-Hawary	Room: Sable D
14:00 –17:40	**Shipboard Electrical Engineering Design Challenges and Recommendation**

Friday, August 23, 2013 16:00 – 17:40

16:00 – 17:40	*Oral Sessions*
Session FE1: Smart Grid including HVDC and FACTS II **Chair: Hussein Mouftah/Hung Huynh**	**Room: Sable A**
16:00	**A Modular Solid State Transformer with a Single-Phase Medium-Frequency Transformer.** Geza Joos (McGill University); Ali Shojaei (McGill University) мун
16:20	**E-Mobility in Smart Microgrids: A New Research Area for Communications Networks.** Intissar Harrabi (INRS-EMT); Martin Maier (INRS-EMT) bк!
16:40	**A Game Theoretic Approach for Plug-in Hybrid Electrical Vehicle Load Management in the Smart Grid.** Naouar Yaagoubi (University of Ottawa); Hussein T. Mouftah (university of Ottawa) фп
17:00	**Time Slot Allocation in WSNs for Differentiated Smart Grid Traffic.** Hussein Mouftah (); Irfan Al-anbagi (University of Ottawa); Melike Erol-Kantarci (University of Ottawa) нум
17:20	**A Risk Assessment Framework for the Smart Grid.** Voicu Groza (University of Ottawa); Dan Krewski (University of Ottawa); Greg Paoli (Risk Science International; Ottawa) мнн
Session FE2: Integrated Energy System Planning II **Chair: Ehab El-Saadany/Phil Zinck**	**Room: Sable B**
16:00	**Effect of Network Configuration on Maximum Loadability and Maximum Allowable DG penetration in Distribution Systems .** Ehab El-Saadany (University of Waterloo); Aboelsood Zidan (University of Waterloo) нпн
16:20	**Accommodating high penetration of PEV in distribution networks.** Ehab El-Saadany (University of Waterloo); Mostafa Shaaban (U Waterloo) нлр
16:40	**In Search of An Optimization Tool for Renewable Energy Resources: Homer vs. In-House Model.** Amar Kumar (Tecsis Corporation) нсн
17:00	**Oil Barrel Price Forecasting: A Case Study of Saudi Arabia**. M.E. El-Hawary (Dalhousie University); Bandar Mutwali (Dalhousie University) нмм
17:20	**An Overview of Inverter Topologies for Photovoltaic Electrical Energy.** M.E. El-Hawary (Dalhousie University); Hamed Aly (Dalhousie University); Shadi Shehadeh (Dalhousie University) нол

Session FE3: Computational Methods **Chair:** Benjamin Jeyasurya **/Perry Mason**	**Room: Sable C**
16:00	**Dynamic State Estimation in Power Systems Using Kalman Filters .** Benjamin Jeyasurya (Memorial University of Newfoundland); Hamed Tebianian (Memorial University) oϕc
16:20	Differential Protection of Transformer Based on Artificial Neural Network and Programmable Logic. Ricardo Caneloi Santos () bк!
16:40	**Measurement-Based Analysis of Power System Small Signal Stability .** Dan Lin (Memorial University of Newfoundland); Benjamin Jeyasurya (Memorial University of Newfoundland) bк!
17:00	**The Influence of Parallel Capacitor to Output Voltage in High-Frequency ESP Power.** Kexin Zhang (Harbin Institute of Tec;Harbin Institute of Technology) oнп

Session FP 4: Workshop **Invited Speaker: Moni Islam, IEEE Standard Association** **Chair: Dr. Ferial El-Hawary**	**Room: Sable D**
14:00 –17:40	**Shipboard Electrical Engineering Design Challenges and Recommendation bк!**