



Electrical Power Conference 2007 Conférence sur l'Énergie Électrique 2007

"Renewable and Alternative Energy Resources"
"Source d'Énergies Renouvelables et Alternatives"

October 25 - 26, 2007, Montréal, Québec, Canada



TECHNICAL PROGRAM

EPC07 Program at a Glance

Wednesday, October 24, 2007

6:00PM – 8:00PM	<p>EPC 2007 Pre-Conference Reception Location: Concordia University, Room # EV002-260 1515 St. Catherine West, Montreal, Quebec (Concordia University location is about 20 minutes walk from the Conference Hotel. A metro connection is available from the Hotel to Guy Concordia Metro station. Room information will also be posted in the Lobby at Concordia University)</p> <p>Opening Remarks by Dr. Vijay Sood, EPC2007 General Chair and Dr. Bob Hanna, IEEE Canada President</p> <p>Research Activities at Concordia University by Dean Esmail, the Dean of Electrical Engineering, Concordia University</p> <p>IGEE at Polytechnic, Montreal by Dr. Huang Le-Huy, Director of IGEE</p> <p>Networking Light snacks and soft drinks will be served; a cash bar will be available.</p> <p>Note: An advance Registration desk will be open at this location also.</p>
--------------------	---

Thursday, October 25, 2007

8:00AM – 8:30AM	<p>Opening Ceremony Room: Ballroom</p>		
8:30AM – 11:00AM	<p>Plenary Session Room: Ballroom Co-Chairs: Dr. Vijay Sood and Dr. B.Hanna</p>		
	8:30AM	<p><i>Widespread Implementation of Electricity Storage: Is Progress Being Made?</i> Mr. Bradford Roberts, S&C Electric Company, USA</p>	
	9:15AM	<p><i>Non-intentional Islanding of Distributed Synchronous Generators: Risks and Solutions</i> Dr. Wilson Xu, University of Alberta, Canada</p>	
	10:00AM	<p>Coffee Break Room: Foyer – S1</p>	
	10:15AM	<p><i>Exergy Concept And Its Application</i> Dr. Marc A. Rosen, University of Ontario Institute of Technology, Canada</p>	
11:00AM – 12:00PM	<p>Oral Sessions</p>		
	<p>Session Th-A-1 Wind Energy Technology I Room: Ballroom</p>	<p>Session Th-A-2 Smart Networks Technology I Room: Hibiscus A</p>	<p>Session Th-A-3 Solar Energy Technology Room: Hibiscus B</p>
	<p>Lunch, Room: Restaurant Chez Chine</p>		
12:00PM – 1:00PM	<p>Luncheon Presentation: The Plasco Energy Conversion System by Marc Bacon, P.Eng. & ing., Vice President Engineering, Plasco Energy Group, Inc.</p>		
1:00PM – 2:40PM	<p>Oral Sessions</p>		
	<p>Session Th-P-1 Wind Energy Technology II Room: Ballroom</p>	<p>Session Th-P-2 Hydro Power Technology Room: Hibiscus A</p>	<p>Session Th-P-3 Power Electronics I Room: Hibiscus B</p>
	<p>Coffee Break Room: Foyer – S1</p>		
2:40PM – 3:00PM	<p>Coffee Break Room: Foyer – S1</p>		

3:00PM – 4:40PM	Oral Sessions		
	Session Th-P-4 Wind Energy Technology III Room: Ballroom	Session Th-P-5 Smart Networks Technology II Room: Hibiscus A	Session Th-P-6 Fuel Cell Technology Room: Hibiscus B
4:40PM – 6:30PM	Panel Sessions		
	Topic 1 Renewable Microgrid Applications – Status and Prospects Room: Ballroom	Topic 2 Hydro Power Technology Room: Hibiscus A	
6:30PM – 9:00PM	BANQUET Room: Ballroom		
Friday, October 26, 2007			
8:00AM – 8:10AM	Opening Remarks Room: Ballroom		
8:10AM – 10:45AM	Plenary Sessions Room: Ballroom Co-Chairs: Dr. Vijay Sood and Dr. B. Hanna		
	8:10AM	<i>Cognitive Power Grid – an Intelligent Electric Energy Management System to Fuel Global Information Economy</i> Dr. Krishna Shenai, Utah State University, USA	
	8:55AM	<i>Overview of the Analytical Methodology Issues Involved In Wind Integration Studies</i> Dr. Innocent Kamwa, Hydro-Québec Research Institute, Canada	
	9:40AM	Coffee Break Room: Foyer – S1	
	10:00AM	<i>Power Electronic Converters – Fueling the Rapid Growth in Renewable Energy Systems</i> Dr. Liuchen Chang, University of New Brunswick, Canada	
10:45AM – 12:05PM	Oral Sessions		
	Session Fr-A-1 Wind Energy Technology IV Room: Dahlia	Session Fr-A-2 Energy Efficiency Technology Room: Hibiscus A	Session Fr-A-3 Power Electronics II Room: Hibiscus B
12:05PM – 1:00PM	Lunch Room: Restaurant Chez Chine		
1:00PM – 2:40PM	Poster Sessions Room: Ballroom		
2:40PM – 3:00PM	Coffee Break Room: Foyer – S1		
3:00PM – 4:40PM	Oral Sessions		
	Session Fr-P-1 Wind Energy Technology V Room: Dahlia	Session Fr-P-2 Smart Networks Technology III Room: Hibiscus A	Session Fr-P-3 Renewable Energy Markets & Technology Trends Room: Hibiscus B
4:40PM – 5:40PM	Closing Room: Ballroom		

Technical Program

Thursday, October 25, 2007 8:00AM – 11:00AM

Opening Room: Ballroom

8:00AM *Opening Ceremony*

Plenary Session Room: Ballroom Co-Chairs: Dr. Vijay Sood and Dr. B. Hanna

8:30AM *Widespread Implementation of Electricity Storage: Is Progress Being Made?*
Mr. Bradford Roberts, S&C Electric Company, USA

9:15AM *Non-intentional Islanding of Distributed Synchronous Generators: Risks and Solutions*
Dr. Wilson Xu, University of Alberta, Canada

10:00AM Coffee Break **Room: Foyer – S1**

10:15AM *Exergy Concept And Its Application*
Dr. Marc A. Rosen, University of Ontario Institute of Technology, Canada

Thursday, October 25, 2007 11:00AM – 12:00AM

Session Th-A-1: Wind Energy Technology I Room: Ballroom

Chair: A. Sharaf, University of New Brunswick

Co-chair: B. Djokic, National Research Council Canada

11:00AM *A New Fault Ride-through Strategy for Doubly Fed Wind-Power Induction Generator*
Ali H. Kasem¹, Ehab F. El-Saadany¹, Hassan H. El-Tamaly², and Mohamed A. A. Wahab²;
¹University of Waterloo, Canada, ²Minia University, Egypt

11:20AM *Variable Speed Wind Turbines Using Cage Rotor Induction Generators Connected to the Grid*
L. Mihet-Popa¹, V. Groza², G. Prostean¹, I. Filip¹, I. Szeidert¹;
¹Politehnica University of Timisoara, Romania, ²University of Ottawa, Canada

11:40AM *Dynamic Voltage Stabilization of Stand-Alone Wind Energy Schemes*
A.M. Sharaf¹, A. S. Aljankawey¹, I. H. Altas²; ¹University of New Brunswick, Canada,
²Karadeniz Technical University, Turkey

Session Th-A-2: Smart Networks Technology I Room: Hibiscus A

Chair: R. Cheung, Ryerson University

Co-chair: W. Almuhtadi, Algonquin College

11:00AM *Supervisory Hybrid Control of a Micro Grid System*
M. Shahid Khan, and M. R. Iravani; University of Toronto, Canada

11:20AM *Reliability Based Analysis for Optimum Allocation of DG*
Y.M. Attwa, and E.F. El-Saadany; University of Waterloo, Canada

11:40AM *Network Security Management and Authentication of Actions for Smart Grids Operations*
Alexander Hamlyn¹, Helen Cheung¹, Todd Mander^{1,2}, Lin Wang¹,
Cungang Yang¹, Richard Cheung¹; ¹Ryerson University, Canada, ²University of Teesside, UK

Session Th-A-3: Solar Energy Technology Room: Hibiscus B

Chair: L. Lopes, Concordia University,

Co-chair: A. Aghdam, Concordia University

- 11:00AM *A Hybrid Photovoltaic PV Array-Battery Powered EV-PMDC Drive Scheme*
A. M. Sharaf, E. Ozkop¹, and I. H. Altas²; ¹University of New Brunswick, Canada, ²Karadeniz Technical University, Turkey
- 11:20AM *Solar Photovoltaic Array's Shadow Evaluation Using Neural Network with On-Site Measurement;*
Dzung D. Nguyen, Brad Lehman; Sagar Kamarthi; Northeastern University, USA
- 11:40AM *Modeling Photovoltaic DC Primary Sources as Grid Connected Inverter Supplies Considering Non-linear Effects*
C. González-Morán, P. Arbolea, G. Díaz, and J. Gómez-Aleixandre; University of Oviedo, Spain

Lunch 12:00PM – 1:00PM **Room: Restaurant Chez Chine**
Luncheon Presentation: The Plasco Energy Conversion System
by Marc Bacon, P.Eng. & ing., Vice President Engineering, Plasco Energy Group, Inc.

Thursday, October 25, 2007 01:00PM – 02:40PM

Session Th-P-1: Wind Energy Technology II Room: Ballroom

Chair: D. Xu, Ryerson University

Co-chair: A. Aghdam, Concordia University

- 1:00PM *Effect of Low Voltage Ride Through Technologies on Wind Farm*
Jean Morneau, Chad Abbey, and Geza Joos; McGill University, Canada
- 1:20PM *Design of a Robust Speed and Position Sensorless Decoupled P-Q Controlled Doubly-Fed Induction Generator for Variable-Speed Wind Energy Applications*
Dzung D. Nguyen, Brad Lehman; Sagar Kamarthi; Northeastern University, USA
- 1:40PM *The Impact of power Converter Technologies on Stand alone Wind Turbine applications*
Handy Fortin BLanchette, and Kamal Al-Haddad; École de Technologie Supérieure, Canada
- 2:00PM *Flicker Contribution of a Wind Power Plant with Single and Multiple Turbine Representations*
Roohollah Fadaeinedjad¹, Mehrdad Moallem², Gerry Moschopoulos¹, Sondeep Bassan;
¹University of Western Ontario, Canada, ²Simon Fraser University Canada
- 2:20PM *A Practical Method for Estimation of Fault Ride-Through Capability of Wind Power Farms Based on Squirrel-Cage Rotor Induction Generators*
Ahda P. Grilo, Diogo Salles, Walmir Freitas, and Carlos A. F. Murari; State University of Campinas, Brazil

Session Th-P-2: Hydro Power Technology Room: Hibiscus A

Chair: S. Pejovic, University of Toronto,

Co-chair: R. Cheung, Ryerson University

- 1:00PM *Variable Speed Operation of a New Very Low Head Hydro Turbine with Low Environmental Impact*
Philippe Lautier¹, Claude O'Neil², Claire Deschênes³, H. J. Nanga Ndjana¹, Richard Fraser³, and Marc Leclerc⁴;
¹Envitech Energy Inc., Canada, ²Novatech-Lowatt Turbines Inc., Canada,
³Laval University, Canada, ⁴MJ2, France
- 1:20PM *Smaller Hydro, Higher Risk*
S. Pejovic, B. W. Karney, Q. Zhang, and G. Kumar; University of Toronto, Canada
- 1:40PM *Electricity Usage in Water Distribution Networks*
Gaurav Kumar, and B. W. Karney; University of Toronto, Canada
- 2:00PM *Standardization as Prevention of Fatigue Cracking of Hydraulic Turbine-Generator Shaft*
T. Maricic¹, D. Haber¹, S. Pejovic²; ¹Nigagara Plant Group, OPG, Canada, ²University of Toronto
- 2:20PM *Electrical Power Crisis in Bangladesh: Impacts of the Optimal Use of Energy Limited Hydro Unit on the System Reliability and Production Cost*

Session Th-P-3: Power Electronics Technology I Room: Hibiscus B

Chair: E. Nowicki, University of Calgary

Co-chair: B.Wu, Ryerson University

- 1:00PM *A Novel Shunt Hybrid Power Filter for the Mitigation of Power System Harmonics*
Ab. Hamadi, S. Rahmani, W. Santana, and K. Al-Haddad; École de technologie Supérieure, Canada
- 1:20PM *Properties and Applications of Quadratic Converters*
Sondeep Bassan, and Gerry Moschopoulos; University of Western Ontario, Canada
- 1:40PM *Analysis of a Hybrid Current Source Converter with Bi-directional Power Flow Capability*
M. F. Naguib, and Luiz A. C. Lopes; Concordia University, Canada
- 2:00PM *Analysis of Harmonic Reduction for Synchronized Phase-shifted Parallel PWM Inverters with Current Sharing Reactors*
Nacer Benaifa¹, Hussain Bierk¹, Abu Hamed M. A. Rahim², Ed Nowicki¹;
¹University of Calgary, Canada, ²K.F. University of Petroleum and Minerals, Saudi Arabia
- 2:20PM *A Low Cost Modulated Filter Compensator for Energy-Efficient Enhancement in AC Utilization Systems*
Adel M. Sharaf, Yevgen Biletskiy, and Hassan A. Mahasneh; University of New Brunswick, Canada

Break 2:40PM – 3:00PM **Room: Foyer – S1**

Thursday, October 25, 2007 03:00PM – 04:40PM

Session Th-P-4: Wind Energy Technology III Room: Ballroom

Chair: A. Yazdani; University of Western Ontario

Co-chair: A. Aghdam, Concordia University

- 3:00PM *Real-Time and Off-Line Simulation of a Detailed Wind Farm Model Connected to a Multi-Bus Network*
Jean-Nicolas Paquin, Julien Moyon, and Guillaume Dumur, Vincent Lapointe; Opal-RT Technologies, Canada
- 3:20PM *Islanded Operation of A Doubly-Fed Induction Generator (DFIG) Wind-Power System with Integrated Energy Storage*
Amirnaser Yazdani; University of Western Ontario, Canada
- 3:40PM *PMSG Wind Turbine Performance Analysis During Short Circuit Faults*
A. Abedini, and A. Nasiri; University of Wisconsin-Milwaukee, USA
- 4:00PM *Performance optimization of low-speed induction generators for direct drive wind turbines*
G. Madescu¹, A. Trica², N. Budisan³, O. Prostean³, and M. Biriescu³, M. Mot¹;
¹Romanian Academy-Timisoara Branch, Romania, ²Cleanfield Energy Corp., Canada, ³Politehnica University of Timisoara, Romania
- 4:20AM *Operation of Single-phase Grid-Connected Inverters with Large DC Bus Voltage Ripple*
Nayeem A. Ninad, and Luiz A. C. Lopes; Concordia University, Canada

Session Th-P-5: Smart Networks Technology II Room: Hibiscus A

Chair: A. Foss, ANF Energy Solutions Inc.

Co-chair: W. Almuhtadi, Algonquin College

- 3:00PM *Optimal Fault Predictors for Arc-Type Faults in Radial and Meshed Alternating Current Distribution Systems*
G. B. Weyrich Morris, E. Castillo-Guerra, A. M. Sharaf, and M. Stevenson;
University of New Brunswick, Canada
- 3:20PM *Dynamic analysis and Field Verification of an Innovative Anti-islanding Protection Scheme based on*

Directional Reactive Power Detection

Farid Katiraei¹, Aidan Foss², Chad Abbey¹, Benjamin Strehler³;

¹CANMET Energy Technology Centre - Varennes, Natural Resources Canada,

²ANF Energy Solutions Inc., Canada, ³Genesys Biogas Inc., Canada

3:40PM *New Routing Mechanism of Enabling DNP3 for Smart Distribution System Collaborative Computing*

Todd Mander^{1,2}, Helen Cheung¹, Alexander Hamlyn¹, Richard Cheung¹;

¹Ryerson University, Canada, ²University of Teesside, UK

4:00PM *Control and Protection of Distribution Network with Non-Utility Induction Generators*

Hamidreza Bakhshi¹, Innocent Kamwa²; ¹SNC-Lavalin T&D Inc., Canada, ²Hydro-Québec (IREQ), Canada

Session Th-P-6: Fuel Cells Technology Room: Hibiscus B

Chair: J. Jiang, University of Western Ontario

Co-chair: A. Aghdam, Concordia University

3:00PM *Single Stage Power Electronic Interface for A Fuel Cell Based Power Supply System*

Shailendra Jain¹, Jin Jiang¹, Xinhong Huang¹, and Srdjan Stevandic²; ¹University of Western Ontario, Canada,

²MVA Eng. Group, Canada

3:20PM *Design and Implementation of a Control System for a Microgrid involving a Fuel Cell Power Module*

Zhutian Wang, Xinhong Huang, and Jin Jiang; University of Western Ontario, Canada

3:40PM *Fuel Cells - Configuration and Operation*

Janaki Balakrishnan; TDND Canada, Canada

4:00PM *Status Review of Power Control Strategies for Fuel Cell Based Hybrid Electric Vehicles*

Di Wu, and Sheldon S. Williamson; Concordia University, Canada

4:20PM *Impact of Large-Scale Distributed Energy Sources under Government Incentive Programs: An Example*

A. T. Moore, and J. Jiang; University of Western Ontario, Canada

Panel Sessions: 4:40PM – 6:30PM

Topic 1: *Renewable Microgrid Applications – Status and Prospects* Room: Ballroom

Chair: G. Joos, McGill University

Presentation 1: *R&D overview - Microgrid activities in Canada*

F. Katiraei, NRCAN CANMET Energy Technology Center-Varennes

Presentation 2: *Microgrid value propositions and how they drive R&D and technology development needs*

S. Blazewicz, Navigant Consulting – USA

Presentation 3: *Energy Storage and Power Conditioning System for Utility-Grid Interactive and Micro-Grid Load Following Operations*

J. Rajda, SatCon Power Systems

Topic 2: *Hydro Power Technology* Room: Hibiscus A

Chair: S. Pejovic, University of Toronto

Presentation 1: *Hydro Hydraulics - a Disappearing Art?*

J. Gordon, Consultant

Presentation 2: *Transient System Response of a Hydro Scheme with an Air Pocket*

S. Hunt

Presentation 3: *Compact Electrical System for Small Hydro*

E.R. Breimer and M. Kostic, Eaton Electrical

BANQUET: Room: Ballroom Thursday, October 26, 2007 06:30PM – 09:00PM

Opening Room: Ballroom

8:00AM *Opening Remarks*

Plenary Session Room: Ballroom Co-Chairs: Dr. Vijay Sood and Dr. B. Hanna

8:10AM *Cognitive Power Grid – an Intelligent Electric Energy Management System to Fuel Global Information Economy*
Dr. Krishna Shenai, Utah State University, USA

8:55AM *Overview of the Analytical Methodology Issues Involved In Wind Integration Studies*
Dr. Innocent Kamwa, Hydro-Québec Research Institute, Canada

9:40AM Coffee Break **Room: Foyer – S1**

10:00AM *Power Electronic Converters – Fueling the Rapid Growth in Renewable Energy Systems*
Dr. Liuchen Chang, University of New Brunswick, Canada

Session Fr-A-1: Wind Energy Technology IV Room: Dahlia

Chair: E. Nowicki, University of Calgary

Co-chair: B. Djokic, National Research Council Canada

10:45AM *Neuro-Fuzzy Vector Control for Doubly-Fed Wind Driven Induction Generator*
Hany M. Jabr, and Narayan C. Kar; University of Windsor, Canada

11:05AM *Review of Distributed Generation Product and Interconnection Standards for Canada*
Sylvain Martel, and Dave Turcotte; CANMET Energy Technology Centre – Varennes, Canada

11:25AM *Optimizing the Annual Energy Production of Doubly-Fed Induction Generator Based Wind Turbines*
D. Aguglia¹, R. Wamkeue², P. Viarouge¹, and J. Cros;
¹Laval University, Canada, ²Université du Québec en Abitibi-Témiscamingue, Canada

11:45AM *New Generation of Signal processing Techniques for Power System Applications*
M. Karimi-Ghartemani¹, A. Bakhshai², and S. Eren²;
¹Sharif University of Technology, Iran, ²Queen's University, Canada

Session Fr-A-2: Energy Efficiency Technology Room: Hibiscus A

Chair: C. Pitis, BC Hydro

Co-chair: W. Almuhtadi, Algonquin College

10:45AM *Reducing Subway's Energy*
Francois Ruellend¹, Kamal Al-Haddad²;
¹Société de transport de Montréal, Canada, ²École de technologie supérieure, Canada

11:05AM *Assessment of Efficiency Improvement Techniques for Future Power Electronics Intensive Hybrid Electric Vehicle Drive Trains*
Xin Li, and Sheldon S. Williamson; Concordia University, Canada

11:25AM *Off-Grid Diesel Power Plant Efficiency Optimization and Integration of Renewable Energy Sources*
Philippe Lautier¹, Martin Prévost², Patrick Éthier², Patrick Martel³; ¹Envitech Energy inc., Canada, ²Société Immobilière du Québec, Canada, ³Genivar, Canada

11:45AM *Energy Efficient Single Stage Axial Fan (ENEF)*
C. D. Pitis; BC Hydro, Canada

Session Fr-A-3: Power Electronics Technology II Room: Hibiscus B

Chair: V. Minea, Hydro-Québec Research Institute

Co-chair: B.Wu, Ryerson University

- 10:45AM *Increased Number of Voltage Steps for Cascaded H-bridge Multilevel Inverters using 3-level Operation in each Half-cycle*
Arif Al-Judi¹, Nacer Benaifa¹, Abu Hamed M. A. Rahim², Ed Nowicki¹;
¹University of Calgary, Canada, ²K.F. University of Petroleum and Minerals, Saudi Arabia
- 11:05AM *An Active Resonance Damper for Distribution Systems Using an ARIMAX Parameter Estimator*
W. C. Santana¹, K. Al-Haddad¹, S. Rahmani², F. Fnaiech², L. E. B. da Silva³;
¹École de technologie Supérieure, Canada, ²École Supérieure des Sciences et Techniques de Tunis, Tunisia,
³Universidade Federal de Itajubá, Brazil
- 11:25AM *The Application of the Cascaded Multilevel Converters in Grid Connected Photovoltaic Systems*
S. Ali Khajehoddin, Alireza Bakhshai, and Praveen Jain; Queen's University, Canada
- 11:45AM *Input-state feedback linearization control of Two-Stage Matrix Converters interfaced with High-Speed Microturbine Generators*
M. Hamouda¹, K. AL-Haddad², F. Fnaiech¹, H. Blanchette²;
¹Ecole supérieure des sciences et techniques de Tunis, Tunisia,
²Ecole de Technologie Supérieure de Montréal, Canada

Lunch 12:05PM – 1:00PM **Room: Restaurant Chez Chine**

Friday, October 26, 2007 01:00PM – 02:40PM

Poster Session Room: Ballroom

Poster Session Fr-P-I: Wind Energy Technology

- P01 *Development of Investment Strategies for Wind Power Generation*
Chanapan Kongnam¹, Somboon Nuchprayoon²;
¹Electricity Generating Authority of Thailand, Thailand, ²Chiang Mai University, Thailand
- P02 *The Integrated Operation of a Renewable Power System*
Mu-Kuen Chen, St. John's University, Taiwan
- P03 *Study of a Hybrid Wind-Diesel System with Compressed Air Energy Storage*
¹Université du Québec à Rimouski, ²Université du Québec à Chicoutimi, Canada, ³Lebanon University of Beirut, Lebanon
- P04 *Renewable Energy in China: A Strategic Imperative*
C.H. Zhang¹, Z.H. Zhao¹, H.L. Lai¹ and J. K. Han²;
¹Harbin Institute of Technology, China, ²Shanghai Rich Power Energy, China
- P05 *The Development and Trend of Wind Power in China*
Jinsong Kang¹, Zhiwen Zhang², Yongqiang Lang³;
¹Tongji University, China, ²Hunan University, China, ³Ryerson University, Canada
- P06 *Wind Energy Developments in Manjil and Roodbar (Iran)*
A. A. Lotfi Neyestank; Iranian Research Institute for Electrical Engineering, Iran
- P07 *Short-Term Wind Energy Forecasting*
P. R. J. Campbell; United Arab Emirates University, United Arab Emirates
- P08 *Modifying power curve of Variable Speed Wind Turbines by Performance Evaluation of Pitch-Angle and Rotor Speed Controllers*
M.H.Zamani, G.H. Riahy and Ali Jahanbani Ardakani;
AmirKabir university of Technology, Iran

Poster Session Fr-P- II: Solar Energy Technology

- P09 *A New Dynamic Voltage Restoration Topology Applied to a Double Connected Solar Plant*
P. Arboleya, C. González-Morán, G. Díaz, and J. Gómez-Aleixandre, A. Hidalgo; University of Oviedo, Spain
- P10 *An MPPT Controller Design for Photovoltaic (PV) Systems Based on the Optimal Voltage Factor Tracking*
J. Ghaisari¹, M. Habibi¹, A. Bakhshai²; ¹Isfahan University of Technology, Iran, ²Queen's University, Canada

Poster Session Fr-P- III: Fuel Cells Technology & Other Renewable Energy Technologies

- P11 *A Simple Current Mode Controller for Two Switches Buck-Boost Converter for fuel cells*
Ahmad Ale Ahmad¹, and Adib Abrishamifar²;
¹Iranian Research Institute of Electrical Engineering, Iran, ²Iran University of Science & Tech., Iran
- P12 *Research on Drive System of Fuel Cell Electric Vehicles*
Jinsong Kang¹, Guoqing Xu¹, Zhouyun Zhang², Jun Gong²; ¹Tongji University, China,
²Annaida Drive Technology Corporation, China
- P13 *Biomass Gasifier Based Hybrid Energy System For Rural Areas*
Ashok.S¹, and P. Balamurugan²;
¹National Institute of Technology Calicut, India, ²Periyar Maniammai University, India
- P14 *Modeling and Simulation of Natural Gas Microturbine Application for Residential Complex Aiming Technical and Economical Viability Analysis*
A.B.M.Aguiar, J.O.P.Pinto, C.Q.Andrea, and L.A.H.Nogueira;
Federal University of Mato Grosso do Sul, Brazil
- P15 *DSM Approach for Water Heater Control Strategy Utilizing Elman Neural Network*
Y. M. Atwa, E.F. El-Saadany, and M.M. Salama; University of Waterloo, Canada

Poster Session Fr-P-IV: Energy Storage & Energy Efficiency Technologies

- P16 *VRB Modeling for the Study of Output Terminal Voltages, Internal Losses and Performance*
J. Chahwan, C. Abbey, and G. Joos; McGill University, Canada
- P17 *Comparison and Analysis of Different Energy Storage Techniques Based on their Performance Index*
Hussein Ibrahim^{1,2}, Adrian Ilinca¹, Jean Perron²;
¹Université du Québec à Rimouski, ²Université du Québec à Chicoutimi, Canada
- P18 *Influence of Overvoltages in Induction Motors Fed by PWM Voltage Inverters on Power Efficiency*
Boukhemis Chetate¹, Mohand Tahar Belassel¹, Stéphane Simard², and Rachid Beguenane²;
¹University of Boumerdes, Algeria, ²University of Quebec, Canada

Poster Session Fr-P-V: Smart Networks Technology

- P19 *Transient Stability Assessment for Induction Generator Embedded Power Systems*
Yu-Jen Lin¹, Rui-Xiang Ho¹, Jing-Xiong Yang¹, Tzu-Chen Hung¹, Meng-Jen. Chen²;
¹I-Shou University, Taiwan, ²National Kaohsiung University of Applied Sciences, Taiwan
- P20 *Communication Security Architecture for Smart Distribution System Operations*
Todd Mander^{1,2}, Helen Cheung¹, Alexander Hamlyn¹, and Richard Cheung¹;
¹Ryerson University, Canada, ²University of Teesside, UK
- P21 *Network-enabled Real-time Monitoring of Smart Power Distribution Operating States*
Helen Cheung¹, Alexander Hamlyn¹, Todd Mander^{1,2}, Lin Wang¹, Cungang Yang¹, Richard Cheung¹;
¹Ryerson University, Canada, ²University of Teesside, UK
- P22 *Strategy and Role-based Model of Security Access Control for Smart Grids Computer Networks*
Helen Cheung¹, Alexander Hamlyn¹, Todd Mander^{1,2}, Cungang Yang¹, Richard Cheung¹;
¹Ryerson University, Canada, ²University of Teesside, UK

Poster Session Fr-P-VI: Electricity Markets

- P23 *Modeling and Forecasting of Energy Prices using Non-Stationary Markov Models versus Stationary Hybrid Models including a Survey of all Methods*
H. Valizadeh Haghi, and S. M. Moghaddas Tafreshi; K. N. Toosi University of Technology, Iran
- P24 *A Hybrid Modeling Technique for Load Forecasting*
P. R. J. Campbell; United Arab Emirates University, United Arab Emirates
- P25 *A Comprehensive Short-Term Operations Framework for a Disco in Competitive Electricity Markets*
Ayed A. S. Algarni, and Kankar Bhattacharya; University of Waterloo, Canada
- P26 *Annual Electricity Demand Prediction for Iranian Agriculture Sector Using ANN and PSO*
Seyyed Ali Pourmousavi Kani and Nima Farrokhzad Ershad; Amirkabir University of Technology, Iran

Poster Session Fr-P-VII: Other Power Technologies

- P27 *Voltage Rise due to Regenerative Braking of DC machines associated with Gantry Cranes at Kaohsiung Harbour*
Yu-Jen Lin¹, Cheng-Yi Hung², Tzu-Chen Hung¹;
¹I-Shou University, Taiwan, ²Evergreen Marine Cooperation, Taiwan
- P28 *Implementation of Capacitor Placement and Voltage Reduction on Distribution Feeder*
Somboon Nuchprayoon, and Natthaphot Wiraphorn; Chiang Mai University, Thailand
- P29 *Novel Control Strategies for Photovoltaic Powered PMDC Motor Drives*
A. M. Sharaf¹, E. Elbakush¹, and I. H. Altas²;
¹University of New Brunswick, Canada, ²Karadeniz Technical University, Turkey
- P30 *Hydro Hydraulics – a disappearing art?*
J. L. Gordon, Independent Hydropower Consultant, Canada
- P31 *Improving the Efficiency of Electrical Systems via Exergy Methods*
Marc A. Rosen; University of Ontario Institute of Technology, Canada
- P32 *Exergy Concept and its Application*
Marc A. Rosen; University of Ontario Institute of Technology, Canada

Break 2:40PM – 3:00PM **Room: Foyer – S1**

Friday, October 26, 2007 03:00PM – 04:40PM

Session Fr-P-1: Wind Energy Technology V **Room: Dahlia**

Chair: C. Lopes, Concordia University

Co-chair: B. Wu, Ryerson University

- 3:00PM *Reactive Power Control of Current Source Converter based Wind Energy System*
Yongqiang Lang¹, Bin Wu¹, Navid Zargari²; ¹Ryerson University, Canada, ²Rockwell Automation, Canada
- 3:20PM *Field Validation of a Doubly Fed Induction Generator (DFIG) Model*
Soubhik Auddy¹, Rajiv Varma¹, Michael Dang²;
¹University of Western Ontario, Canada, ²Hydro One Network Incorporation (HONI), Canada
- 3:40PM *Performance of a Controller for Small Grid Connected Wind Turbines*
R. Ahshan, M. T. Iqbal, and George K. I. Mann; Memorial University, Canada
- 4:00PM *Wind Power in Ontario: An Economical Valuation*
M.H. Albadi, and E.F. El-Saadany; University of Waterloo, Canada
- 4:20PM *Voltage and Frequency Regulation of a Stand-Alone Self-Excited Induction Generator*
Ghulam Dastagir, Luiz A. C. Lopes; Concordia University, Canada

Session Fr-P-2: Smart Networks Technology III Room: Hibiscus A

Chair: V. Groza, University of Ottawa

Co-chair: W. Almuhtadi, Algonquin College

- 3:00PM *Increasing the Transfer Capacity of a Corridor through Power Flow Control*
R. Mohamedi¹, S. Lefebvre², A-O. Ba², A. Houle¹;
¹Université de Sherbrooke, Canada, ²Institut de Recherche d'Hydro-Québec (IREQ), Canada
- 3:20PM *Network-based Adaptive Protection Strategy for Feeders with Distributed Generation*
Helen Cheung, Alexander Hamlyn, Cungang Yang, and Richard Cheung; Ryerson University, Canada
- 3:40PM *A Monitoring and Identification Scheme for Power Quality Assessment*
Yevgen Biletskiy, Ning Chang, Adel M. Sharaf, and Hassan A. Mahasneh;
University of New Brunswick, Canada
- 4:00PM *Voltage Variation Analysis in Interconnected Electrical Network - Distributed Generation*
Mamadou Lamine Doumbia, and Kodjo Agbossou; Université du Québec à Trois-Rivières, Canada
- 4:20PM *Improved Power Quality Based Controller for a 3-Phase 4-Wire Isolated Wind Energy System*
Bhim Singh and Gaurav Kumar Kasal, Indian Institute of Technology, India; Ambrish Chandra and
Kamal-Al-Haddad, Ecole de Technologie Supérieure, Université du Québec, Canada

Session Fr-P-3: Renewable Energy Markets & Technology Trends Room: Hibiscus B

Chair: C. Pitis, BC Hydro

Co-chair: R. Cheung, Ryerson University

- 3:00PM *Global Demand Projections for Renewable Energy Resources*
Aiden J. Morrison; University of Calgary, Canada
- 3:20PM *Using Geothermal Energy and Industrial Waste Heat for Power Generation*
V. Minea; Hydro-Québec Research Institute, Canada
- 3:40PM *To Switch, or Not To Switch: A Critical Analysis of Canada's Ban on Incandescent Light Bulbs*
M. Ivanco¹, B. W. Karney², and K. J. Waher²;
¹Atomic Energy of Canada Limited, Canada, ²University of Toronto, Canada
- 4:00PM *Development of a Versatile Voltage Stability Index Algorithm*
D. O. Dike, S.M. Mahajan, and G. Radman; Tennessee Technological University, USA
- 4:20PM *Reactive Power Ancillary Service from Wind Farms*
Nayeem Rahmat Ullah¹, Kankar Bhattacharya², Torbjorn Thiringer¹;
¹Chalmers University of Technology, Sweden, ²University of Waterloo, Canada

Closing 4:40PM – 5:40PM Room: Ballroom