Ehab Fahmy El-Saadany

Curriculum Vitae

1. PERSONAL DATA

a) ***Address:***

University of Waterloo
Electrical and Computer Engineering Department
Office E3-3157
200 University Avenue West
Waterloo, ON, Canada N2L 3G1

519-888-4567 Ext. 33035
Fax 519-746-3077
ehab@uwaterloo.ca
http://www.power.uwaterloo.ca

b) *Education:*

DEGREE	PLACE	DATES	COMMENTS
PhD Electrical Engineering	University of Waterloo CANADA	April 1998	Thesis: Power Quality Improvement for Distribution Systems Under Non-Linear Condition Advisors: Prof. Magdy M.A. Salama
M.Sc. Electrical Power and Machines Engineering	Ain Shams University Cairo, EGYPT	May 1990	Thesis: Excitation Control for Improving Sub-synchronous Resonance Stability Margins. Advisors: Prof. Mohamed A. Badr Overall Average: 91%
BSc. Electrical Power and Machines Engineering	Ain Shams University Cairo, EGYPT	June 1986	Thesis: Design of double cage induction motor Advisor: Prof. Ali K. Al-Kharshi Overall Average: 89%

c) *Employment:*

POSITION	PLACE	DATES	COMMENTS
Professor Associate Professor Assistant Professor Lecturer	University of Waterloo E&CE Department Canada	July 2010-Present July 2005-June 2010 May 2002-July 2005 Aug. 2000-May 2002	Instructor of several Electrical Engineering undergraduate and graduate courses. Supervisor of undergraduate and graduate research assistants, and several teaching assistants. Research: Distribution system operation and control focusing on integration of Distributed Generation into the utility grid; particularly DG planning, interfacing, protection, economic evaluation, sustainable energy sources integration, and micro-grids. Power quality enhancement in distribution systems, particularly passive and active filter design, detection and classification of PQ problems, and monitoring the distribution system.
Director; Electric Power Eng. Program	University of Waterloo E&CE Department Canada	Sept 2010-Present	Managing the on-line Power MEng program
Assistant Professor	Ain Shams University Electrical Power and Machines Dept. Cairo, Egypt	Jan. 1999-August 2000	Instructor of three Electrical Engineering undergraduate and graduate courses. Supervisor of undergraduate and graduate research assistants, and several teaching assistants. Research: Power quality detection and classification.
Senior Design Engineer	International Engineering Consultants, Cairo, Egypt	Feb. 1999-August 2000	Forecasting for electric grid expansion for Yemen.
Visiting Assistant Professor	University of Waterloo E&CE Department Canada	June 1999-Sept. 1999	Research on detection of commutation failure classification.
Research Associate	Calian Technology Service, Kanata, Ontario, Canada	March 1998-Nov. 1998	Harmonic propagation and effects on Navel ships.
Postdoctoral Fellow	University of Waterloo E&CE Department Canada	May 1998-Jan 1999	Research of Active and passive filters design and sensitivity analysis.
Lecturer	University of Waterloo E&CE Department Canada	May 1998-Jan 1999	Taught GENE123 in Spring 1998

Research Associate	Ian Martin Limited, Oakville, Ontario, Canada	Oct 1996-March 1998	Modeling, simulation and design for harmonic filters
Research Assistant	University of Waterloo ECE Department Canada	May 1994-April 1998	Research several areas in distribution systems, modeling and analysis of harmonic propagation; design filters for harmonic suppression; assist on computer setup and simulations for EMTP workshop.
Teaching Assistant	University of Waterloo ECE Department Canada	May 1994-April 1998	Taught eleven semesters various undergraduate courses GENE123, ECE100, ECE261, ECE 362
Assistant Lecturer	Ain Shams University Electrical Power and Machines Dept. Cairo, Egypt	Nov 1990-April 1994	Teach tutorials and labs for different electrical engineering courses.
Design Engineer	GEFECO Consultant, Cairo, Egypt	Jan. 1990-Sept. 1993	Analysis and design of distribution networks
Demonstrator	Ain Shams University Electrical Power and Machines Dept. Cairo, Egypt	Oct. 1986-Nov. 1990	Teach tutorials and labs for different electrical engineering courses.

2. RESEARCH

a) Areas of Interest:

i. Performance evaluation and control of distribution systems with high penetration levels of distributed generation.
ii. Smart grids operation and control.
iii. Analysis and control of wind-based distributed generation.
iv. Development of new control algorithms for the distributed generation interface in grid-connected and micro-grid systems.
v. Monitoring, identification and classification of power quality problems in distribution systems with emphasis on smart grid application.
vi. Utilization of distributed generation as a tool for power quality and voltage stability improvement.

b) *Research Plan:*

1. *Performance evaluation and control of distribution systems:* Development of an economic valuation methodology to study the effect of distributed generation on distribution systems including wind profile and variability; development of distribution system planning methodology accounting for high penetration levels of distributed generation along with their intermittent nature; accurate sizing and sitting of storage devices; development of optimization technique for optimal renewable resources mix calculation; analyzing the impacts of DG interfacing control on islanding detection and non-detective zones; and Investigating the problem of protection relay coordination with high DG penetration.

2. *Smart grids operation and control:* Analyzing different operational scenarios within the context of smart grid operation. Examples are smart system reconfiguration methodologies accounting for system protection, losses and reliability. Further, multi-agent technique will be proposed for active/reactive power management and power quality enhancement within the smart grid operation.
3. *Analysis and control of wind-based DG:* Examining the role of taxation policy and incentives on wind-based DG viability; development of new control techniques for wind based DG to enhance its performance under different wind speeds and to improve its fault ride-through capabilities; development of accurate wind and power forecasting techniques; and analyzing the impact of wind power integration (control strategy, location and size) on the electricity market pricing.
4. *Development of new control algorithms for the distributed generation interface:* Development of an improved current control schemes for three-phase pulse-width-modulated (PWM) voltage source inverters (VSI); both sensorless and variable structure controls will be implemented; implementing the developed control on real time simulation using RTDS; development of innovative control strategy for smart grid applications based on multi-agent techniques.
5. *Monitoring, identification and classification of power quality problems:* Development of new monitoring techniques for smart grid application; development of new on-line power quality classification techniques based on smart sensors.
6. *Utilization of distributed generation as a tool for power quality improvement:* Development of new control strategy for power quality sharing mechanisms among different DG units; development of reactive power sharing strategies among different DGs for voltage stability improvement.

c) Publications: (223)

(i) Patents (3)

[1] K. El-Rayes, E.M. Abdel-Rahman, R.R.Mansour, E.F. El Saadany, "Field Disruption Energy Harvester," Provisional patent no. 61562577 , December 2011

[2] M.A.E.Mahmoud, E.M. Abdel-Rahman, R.R.Mansour, E.F. El Saadany, "Springless Vibration Energy harvesters", Provisional patent no. 61288616 , December 2009.

[3] M. S. M. Soliman, E. M. Abdel-Rahman, E. F. EL-Saadany and R. R. Mansour, "A Wideband Micro-Power Generator", A US full patent application submitted in May 2009.

Publications (* denotes graduate student and *[1] denotes a PDF or Visiting Scholar/Professor)

Total Citations in Publish or Perish, based on Google Scholar: **1959**

H-**Idex: 24**

(ii) Articles submitted in refereed Journals: (8)

[1] H.E. Farag, E.F. El-Saadany, R. Seethapathy, "A cooperative voltage control for multiple feeders with distributed generation" submitted in June.16, 2011 to the IEEE Transactions on Power Delivery.

[2] H.E. Farag, E.F. El-Saadany, R. Ravi Seethapathy, "The evolution of voltage and reactive power control in smart distribution systems" submitted in May.5, 2011 to the international journal of emerging power systems.

[3] H.E. Farag, Morad Abdelaziz, and E.F. El-Saadany, "Voltage and reactive power impacts on the successful operation of microgrids in active distribution systems" Revisions submitted in Jan. 6, 2012 to the IEEE Transactions on Smart Grid.

[4] A. Zidan and E. F. El-Saadany, "Distribution System Reconfiguration Considering Variable Load Demand and Variable Generation from Renewable Resources", submitted to IEEE Transactions on Power Systems at Augest, 2, 2011.

[5] A. Zidan and E.F. El-Saadany, "A Cooperative Multi-Agent Framework for Self-Healing Mechanisms in Distribution Systems"", submitted to IEEE Transactions on smart grid at November, 24, 2011.

[6] M. Farouk, Y. Atwa and E.F. El-Saadany, "DG Allocation for Benefit Maximization in Distribution Networks", submitted to IEEE Transactions on Power Systems at Augest, 2, 2011. Revision was submitted on October 11 2011

[7] M. Farouk, Y. Atwa and E.F. El-Saadany, "PEVs Modeling and Impacts Mitigation in Distribution Networks," submitted to IEEE Transactions on Power Systems at December, 23, 2011.

[8] R.S. Al Abri, E. F. El-Saadany, and Y. M. Atwa, "Optimal Placement and Sizing Method to Improve the Voltage Stability Margin in a Distribution System Using Distributed Generation," submitted to IEEE Transactions on Power Systems, August 12, 2011. Received revisions in December 15th.

(iii) <u>Articles published and accepted to appear in refereed Journals</u>: (81)

[1] H.E. Farag, E.F. El-Saadany and R. Seethapathy, "A Two Ways Communication-Based Distributed Control for Voltage Regulation in Smart Distribution Feeders," accepted in IEEE Transactions on Smart Grids, September 05, 2011.

[2] Y.M. Atwa, E.F. El-Saadany, M.M.A. Salama, R. Seethapathy, M. Esam, and S. Conti, "Adequacy Evaluation of Distribution System Including Wind/Solar DG during Different Modes of Operation, IEEE Transactions on Power Systems, Vol. 26, No. 4, pp. 1945-1952, November 2011.

[3] Y. A.-R. I. Mohamed, and E.F. El-Saadany, "A Robust Natural-Frame-Based Interfacing Scheme for Grid-Connected Distributed Generation Inverters", IEEE Transactions on Energy Conversion, Vol. 26, No. 3, pp. 728-736, September 2011.

[4] H.H. Zeineldin, E.F. El-Saadany, M.M.A. Salama, A.H. Alaboudy, W. Woon," Optimal Sizing of Thyristor Controlled Impedance for Smart Grids with Multiple Configurations", IEEE Transactions on Smart Grids, Vol. 2, No. 3, pp. 528-537, September 2011.

[5] H.E. Farag, E.F. El-Saadany, A. Zidan and R. ElShatshat, "A generalized power flow analysis for distribution systems with high penetration of distributed generation", Electric Power System Research, Vol. 81, No. 7, pp. 1499-1506, July 2011.

[6] Y.M. Atwa, and E.F El-Saadany, "Probabilistic Approach for Optimal Allocation of Wind-Based Distributed Generation in Distribution Systems," IET Renewable Power Generation, Vol. 5, No. 1, pp. 79-88, January 2011.

[7] M.H. Al-Badi, and E.F. El-Saadany, "Comparative Study on Impacts of Wind Profiles on Thermal Units Scheduling Costs", IET Renewable Power Generation, Vol. 5, No. 1, pp. 26-35, January 2011.

[8] Y.M Atwa and E.F. El-Saadany, "Optimal Allocation of ESS in Distribution Systems With a High Penetration of Wind Energy", IEEE Transactions on Power Systems, Vol. 25 , No. 4 , pp. 1815-1822, November 2010.

[9] A.H. Kasem, E.F. El-Saadany, H.H. El-Tamaly, and M.A.A. Wahab, "Power ramp rate control and flicker mitigation for directly grid connected wind turbines", IET Renewable Power Generation, Vol.: 4 , no. 3, pp. 261-271, October 2010.

[10] M.H. Albadi, and E.F. El-Saadany, "Optimum turbine-site matching", Energy Journal, Vol. 35, No. 9, pp. 3593-3602, September 2010.

[11] M.H. Albadi, and E.F. El-Saadany, "Overview of wind power intermittency impacts on power systems", Electric Power Systems Research, Vol. 80, No. 6, pp. 627-632, June 2010.

[12] M.H. Albadi, and E.F. El-Saadany, "New method for estimating CF of pitch-regulated wind turbines", Electric Power Systems Research, Vol. 80, No. 6, pp.1182-1188, June 2010.

[13] M.I. Marei, E.F. El-Saadany, and M.M.A. Salama, "Experimental evaluation of envelope tracking techniques for voltage disturbances", Electric Power Systems Research Vol. 80, No. 3, Pages 339-344, March 2010.

[14] Y.M Atwa,; E.F. El-Saadany and A.-C Guise, "Supply Adequacy Assessment of Distribution System Including Wind-Based DG During Different Modes of Operation", IEEE Transactions on Power Systems, Vol. 25 , No. 1 , pp. 78-86, February 2010.

[15] Y.M Atwa,; E.F. El-Saadany,; M.M.A. Salama, and R. Seethapathy, "Optimal Renewable Resources Mix for Distribution System Energy Loss Minimization", IEEE Transactions on Power Systems, Vol. 25 , no. 1 , pp. 360-370, February 2010.

[16] M.A.E. Mahmoud, E.M. Abdel-Rahman, E.F. El-Saadany and R.R. Mansour, "Electromechanical coupling in electrostatic micro-power generators", Smart Materials and Structures Journal, Vol.19, No. 2, pp. 1-8, February 2010.

[17] M.S.M. Soliman*, E.M. Abdel-Rahman, E.F. El-Saadany, and R. R. Mansour, "A Design Procedure for Wideband Micro-Power Generators," IEEE Journal of Microelectromechanical Systems, vol. 18, No. 6, pp. 1288-1299, December 2009.

[18] M.H. Albadi, E.F. El-Saadany and H. A. Albadi, "Wind to Power a New City in Oman," Energy, Vol. 34, pp. 1579-1586, November 2009.

[19] M.H. Al-Badi*, and E.F. El-Saadany, "Impacts of Wind Power Variability on Generation Costs- an Overview," The Journal of Engineering Research (TJER), Vol. 7, No. 1, pp. XXX-XXX, October 2009.

[20] M.H. Al-Badi*, and E.F. El-Saadany, "The Role of Taxation Policy and Incentives in Wind-based Distributed Generation Projects Viability: Ontario Case Study Renewable Energy," Renewable Energy, Vol. 34, No. 10, pp. 2224-2233, October 2009.

[21] Y. A.-R. I. Mohamed*, E. F. El-Saadany, and M.M.A. Salama "Adaptive Grid-Voltage Sensorless Control Scheme for Inverter-Based Distributed Generation," IEEE Transactions on Energy Conversion, Vol. 24, No. 3, pp. 683-694, September 2009.

[22] M.H. Al-Badi*, and E.F. El-Saadany, "Wind Turbines Capacity Factor Modeling- A Novel Approach," IEEE Transaction on Power Systems, Vol. 24, No. 3, pp. 1637-1638, August 2009.

[23] Y.M. Atwa*, and E.F El-Saadany, "Annual Wind Speed Estimation Utilizing Constrained Grey Predictor," IEEE Transaction on Energy Conversion, Vol. 24, No. 2, pp. 548 - 550, June 2009.

[24] Y.M. Atwa*, and E.F El-Saadany, "Reliability Evaluation for Distribution System with Renewable Distributed Generation during Islanded Mode of Operation," IEEE Transaction on Power Systems, Vol. 24, No. 2, pp. 572 – 581, May 2009.

[25] A.H. Kasem*, E.F. El-Saadany, H.H. El-Tamaly, and M.A.A. Wahab, "Enhanced Performance of a Doubly Fed Wind-Power Induction Generator at Wind-Range Boundaries," International Journal of Distributed Energy Resources, Vol. 5, 2, pp. 121 – 141, April 2009.

[26] H.H. ZeinElDin*, T.H.M. El-Fouly*, E.F. El-Saadany, and M.M.A. Salama, "Impact of Wind Farm Integration on Electricity Market Prices," IET Renewable Power Generation, Vol. 3, No. 1, pp. 84 - 95 March 2009.

[27] Y.A.-R. I. Mohamed*, and E.F. El-Saadany, "A Control Method of Grid-connected PWM Voltage Source Inverters to Mitigate Fast Voltage Disturbances," IEEE Transactions on Power Systems, Vol. 24, No.1, pp. 489-491, February 2009.

[28] A.H. Al-Badi*1, S.M. Ghania, and E.F. EL-Saadany, "Prediction of Metallic Conductor Voltage owing to Electromagnetic Coupling Using Neuro-Fuzzy Modeling," IEEE Transactions on Power Delivery, Vol. 24, No. 1, pp. 319-327, January 2009.

[29] M.A. Eldery*, E.F. El-Saadany, and M.M.A. Salama, "Development of FPGA Based Phase Locked Loop," Accepted in IEEE Transaction on Measurement and Instrumentation, 2008.

[30] T.H.M. El-Fouly*, E.F. El-Saadany, and M.M.A. Salama, "Impacts of Wake Effect and Time Delay on the Dynamic Analysis of Wind Farms Models," Bulletin of Science, Technology & Society on Renewable Energy & Sustainability, Vol. 28, No. 6, pp. 454-463, December 2008.

[31] A.H. Kasem*, E.F. El-Saadany, H.H. El-Tamaly, and M.A.A. Wahab, "An Improved Fault Ride-through Strategy for Doubly Fed Induction Generator-Based Wind Turbines," IET Renewable Power Generation, Vol. 2, No. 4, pp. 201 – 214, December 2008.

[32] Y. A.-R. I. Mohamed*, and E.F. El-Saadany, "Adaptive Decentralized Droop-Controller to Preserve Power-Sharing Stability of Paralleled-Inverters in Distributed Generation Micro-Grids," IEEE Transaction on Power Electronics, Vol. 23, no. 6, pp. 2806-2816, November 2008.

[33] M.H. Al-Badi*, and E.F. El-Saadany, "A Summary of Demand Response in Electricity Markets," Electrical Power Systems Research Journal, Vol. 78, No. 11, pp. 1989-1996, November 2008.

[34] M.S.M. Soliman*, E. AbdelRahman, E.F. El-Saadany, and R.R. Mansour, "A wideband vibration-based energy harvester," Journal of Micromechanics and Microengineering, Vol.18, 115021, 11pp, October 2008.

[35] T.H.M. El-Fouly*, H.H. ZeinElDin*, E.F. El-Saadany, and M.M.A. Salama, "Impact of Wind Generation Control Strategies, Penetration Level, and Installation Location on Electricity Market Prices," IET Renewable Power Generation, Vol. 2, No. 3, pp. 162 – 169, September 2008.

[36] T.K. AbdelGalil*1, H.H. ZeinElDin*, E.F El-Saadany, and M.M.A. Salama, "Switched Capacitor Location Identification Using TLS-ESPRIT Approach," International Journal of Electrical Power and Energy Systems, Vol. 28, No. 3, pp. 448-455, July, 2008.

[37] T.H.M. El-Fouly*, H.H. ZeinElDin*, E.F. El-Saadany, and M.M.A. Salama, "A New Optimization Model for Distribution Substation Sitting, Sizing, and Timing," International Journal of Electrical Power and Energy Systems, Vol. 30, No. 5, pp. 308-315, June 2008.

[38] Y. A.-R. I. Mohamed*, and E.F. El-Saadany, "Hybrid Variable-Structure Control with Evolutionary Optimum-Tuning Algorithm for Fast Grid-Voltage Regulation Using Inverter-Based Distributed Generation," IEEE Transaction on Power Electronics, Vol. 23, No. 3, pp. 1334 – 1341, May 2008.

[39] Y. A.-R. I. Mohamed*, and E.F. El-Saadany, "A Novel Control Scheme of Grid-Connected PWM Voltage-Source Inverters for Fast Load Voltage Regulation and Effective Mitigation of Voltage Disturbances," IEEE Transaction on Industrial Electronics, Vol. 55, No. 5, pp. 2072-2084, May 2008.

[40] I. El-Samahy*, M.I. Marei*, and E.F. El-Saadany, "Modeling of a Four-Quadrant Switched Reluctance Motor Drive on EMTDC/PSCAD," Journal of Electrical Engineering & Technology, Vol. 3, No. 1, pp.68-78, April 2008.

[41] Z. Shen*, and E.F. El-Saadany, "PEM Fuel Cell Based Distributed Generation Modeling and Interfacing," International Journal of Distributed Energy Resources, Vol. 4, No. 1, pp. 55-76, March 2008.

[42] Y. A.-R. I. Mohamed*, and E.F. El-Saadany, "A Current Control Scheme with an Adaptive Internal Model for Robust Current Regulation and Torque Ripple Minimization in PMSM Direct Drive Systems," IEEE Transactions on Energy Conversion, Vol. 23, No. 1, pp. 92-100, March 2008.

[43] T.H.M. El-Fouly*, E.F. El-Saadany, and M.M.A. Salama, "One Day Ahead Prediction of Wind Speed and Direction," IEEE Transactions on Energy Conversion, Vol. 23, No. 1, pp. 191-201, March 2008.

[44] Y. A.-R. I. Mohamed*, and E.F. El-Saadany, "Robust High Bandwidth Discrete-Time Predictive Current Control with Predictive Internal Model—A Unified Approach for Voltage-Source PWM Converters," IEEE Transactions on Power Electronics, Vol. 23, No. 1, pp. 126-136, January 2008.

[45] Y. A.-R. I. Mohamed*, and E.F. El-Saadany, "Adaptive Discrete-time Grid-voltage Sensorless Interfacing Scheme for Inverter-based DG Units Based on Neural Network Identification and Deadbeat

Current Regulation," IEEE Transactions on Power Electronics, Vol. 23, No. 1, pp. 308-321, January 2008.

[46] T.H.M. El-Fouly*, E.F. El-Saadany, and M.M.A. Salama, "Improved Grey Predictor Rolling Models for Wind Power Prediction," IET Proceedings on Generation, Transmission, and Distribution, Vol. 1, No. 6, pp. 928 – 937, November 2007.

[47] M.I. Marei*, E.F. El-Saadany, and M.M.A. Salama, "A New Approach to Control DVR based on Symmetrical Components Estimation," IEEE Transaction on Power Delivery, Vol. 22, No. 4, pp. 2017-2024, October 2007.

[48] M.A. Eldery*, E.F. El-Saadany, and M.M.A. Salama, "DSTATCOM Effect on The Adjustable Speed Drive Stability Boundaries," IEEE Transactions on Power Delivery, Vol. 22, No. 2, pp. 1202 – 1209, April 2007.

[49] Y.A.-R.I Mohamed*, and E.F. El-Saadany, "An Improved Deadbeat Current Control Scheme With a Novel Adaptive Self-Tuning Load Model for a Three-Phase PWM Voltage-Source Inverter," IEEE Transactions on Industrial Electronics, Vol. 54, No. 2, pp. 747 – 759, April 2007.

[50] H.H. ZeinElDin*, E.F. El-Saadany, T.K. AbdelGalil*1, and M.M.A. Salama, "Islanding Detection of Grid Connected Distributed Generators Using TLS-ESPRIT," Electric Power Systems Research Journal, Vol. 77, No. 2, pp. 155-162, February 2007.

[51] H.H. ZeinElDin*, E.F. El-Saadany, and M.M.A. Salama, "Islanding Detection of Inverter Based Distributed Generation," IEE Proceedings (B) in Generation, Transmission and Distribution, Vol. 153, No. 6, pp. 644 – 652, November 2006.

[52] T.H.M. El-Fouly*, E.F. El-Saadany, and M.M.A. Salama, "A Combined Electro-Mechanical Control Technique for Dynamic Voltage Regulation of a Stand-Alone Wind Turbine Generator," International Journal of Global Energy Issues (IJGEI), Special Issue on: "Renewable Energy and Distributed Generation Systems". Vol. 26, No. 3/4, pp. 361 – 381, October 2006.

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[54] H.H. ZeinElDin*, E.F. El-Saadany, and M.M.A. Salama, "Impact of DG Interface Control on Islanding Detection and Nondetective Zones," IEEE Transactions on Power Delivery, Vol. 21, No. 3, pp. 1515– 1523, July 2006.

[55] M.A. Eldery*, E.F. El-Saadany, and M.M.A. Salama, "A Simple Energy Operator Computational Method For Voltage Flicker Assessment," IEEE Transactions on Power Delivery, Vol. 21, No. 3, pp. 1743 – 1750, July 2006.

[56] H.H. ZeinElDin*, E.F. El-Saadany, and M.M.A. Salama, "Optimal Coordination of Overcurrent Relays Using a Modified Particle Swarm Optimization," Electric Power Systems Research Journal, Vol. 76, No. 11, pp. 988-995, July 2006.

[57] M.A. Eldery*, E.F. El-Saadany, M.M.A. Salama, and A. Vanelli "A Novel Power Quality Monitoring Allocation Algorithm," IEEE Transactions on Power Delivery, Vol. 21, No. 2, pp. 768-777, April 2006.

[58] M.A. Eldery*, T.K. Abdel-Galil*1, E.F. El-Saadany, and M.M.A. Salama, "Identification of Partial Discharge Locations in Transformer Winding Using PSD Estimation," IEEE Transactions on Power Delivery, Vol. 21, No. 2, pp. 1022-1023, April 2006.

[59] H.H. ZeinElDin*, K. Bhattacharya , E.F. El-Saadany, and M.M.A. Salama, "Impact of Intentional Islanding of Distributed Generation on Electricity Market Prices," IEE Proceedings (B) in Generation, Transmission and Distribution, Vol. 153, No. 2, pp. 147-154, March 2006.

[60] S.S. Mohamed, M.M.A. Salama, M. Kamel, E.F. El-Saadany, K.Rizkalla, and J.Chin "Prostate Cancer Multi-feature Analysis Using TRUS Images," Physics in Medicine and Biology Journal: Vol. 50 No. 15, N175-N185, pp. 175-185, August 2005.

[61] E.F. El-Saadany, and H.H. ZeinElDin* "An Optimum Reactance One Port Compensator for Harmonic Mitigation," Electrical Power Quality and Utilization Journal, Vol. 10, No. 1, pp.77-82, July 2005.

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[64] M.A. Eldery*, E.F. El-Saadany, and M.M.A. Salama "A Novel Energy Operator Algorithm for Voltage Envelope Tracking," IEEE Transactions on Power Systems, Vol. 20, No. 1, pp. 510 – 512, February 2005.

[65] M.I. Marei*, E.F. El-Saadany, and M.M.A. Salama, "Envelope Tracking Techniques for Flicker Mitigation and Voltage Regulation," IEEE Transaction on Power Delivery. Vol. 19, No 4, pp. 1854-1861, October 2004.

[66] T.K. Abdel-Galil, M. Kamel, E.F. El-Saadany, A.M. Youssef, and M.M.A. Salama, "Power Quality Disturbance Classification using Inductive Inference Approach," IEEE Transactions on Power Delivery, Vol. 19, No. 4, pp. 1812 – 1818, October 2004.

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[68] M.I. Marei*, E.F. El-Saadany, and M.M.A. Salama, "A Processing Unit for Symmetrical Components and Harmonics Estimation Based on a New Adaptive Linear Combiner Structure," IEEE Transaction on Power Delivery, Vol. 19, No. 3, pp. 1245 – 1252, July 2004.

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[70] M.I Marei*, E.F. El-Saadany, and M.M.A. Salama, "A Novel Current Regulated PWM Technique for ADALINE based Active Power Line Conditioner," Engineering Intelligent Systems Journal. Vol. 12, No. 2, pp. 127-134, June 2004.

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[185] M.I. Marei*, T.El-Fouly*, E.F. El-Saadany, and M.M.A. Salama, "A Flexible Wind Energy Scheme for Voltage Compensation and flicker Mitigation, Proc. IEEE-PES General Meeting, Vol.4, pp. 2491-2497,13-18 July, 2003, Toronto, Canada.

[186] E.F. El-Saadany, "Parameters Affecting Harmonic Propagation and Distortion Levels in Non-Linear Distribution systems", Proc. IEEE-PES Summer Meeting, 19-23 July 2002, Chicago, USA.

[187] M.I. Marei*, E.F. El-Saadany, and M.M.A. Salama, "Flexible Distributed Generation: (FDG)", IEEE-PES Summer Meeting, 19-23 July 2002, Chicago, USA.

[188] T.K. Abdel-Galil, E.F. EL-Saadany, A.M. Youssef, and M.M.A. Salama, "On-line Disturbance Recognition Utilizing Vector Quantization Based Fast Match", IEEE-PES Summer Meeting, 19-23 July 2002, Chicago, USA.

[189] M.I. Marei*, E.F. El-Saadany, and M.M.A. Salama, "A New Contribution into Performance of Active Power Filter Utilizing SVM based HCC Technique", IEEE Proceeding, Summer Meeting, 19-23 July 2002, Chicago, USA.

[190] M.I. Marei*, E.F. El-Saadany, and M.M.A. Salama, "A Novel Current Regulated PWM Technique for Multi-Converter Active Power Line Conditioner, IEEE-PES Winter Meeting, 19-23 January 2002, New York, USA.

[191] T.K. Abdel-Galil, E.F. El-Saadany, and M.M.A. Salama, "Energy Operator for On-Line Tracking of Voltage Flicker Levels", IEEE-PES Winter Meeting, 19-23 January 2002, New York, USA.

[192] T.K. Abdel-Galil, E.F. El-Saadany, and M.M.A. Salama, "Power Quality Assessment in Deregulated Power Systems", IEEE-PES Winter Meeting, 19-23 January 2002, New York, USA.

[193] E.F. El-Saadany and M.M.A. Salama, "PWM Based ASD Harmonic Suppression", IEEE-PES Summer Meeting, 15-19 July, 2001, Vancouver, Canada.

[194] A. Gaouda, E.F. El-Saadany, V.K.Sood, and M.M.A. Salama, "Disturbance Monitoring in HVDC Systems Using Wavelet-Multi-resolution Analysis", Electric Deregulation and Restructuring, and Power Technologies Conference DRPT'2000, 4-7 April 2000, London, UK.

[195] E.F. El-Saadany, M.M.A. Salama and A.Y. Chikhani, "Investigation of System Parameters Affecting the Harmonic Distortion Levels in Distribution Systems Loaded with Non-Linear Loads", 29th North American Power Symposium (NAPS'97), pp.121-128, October 12-15, Wyoming, USA.

(v) Abstracts: (21)

[196] H.H. Zeineldin*, E.F. El-Saadany, and M.M.A. Salama, "Protective Relay Coordination for Micro-grid Operation Using Particle Swarm Optimization", Large Engineering systems Conference on Power Engineering, July 2005.

[197] A.K. Al-Khalifah*, and E.F. El-Saadany, "Investigation of Magnetization Inrush Current in Single-Phase Transformers", Large Engineering systems Conference on Power Engineering, July 2005.

[198] H.H. Zeineldin*, E.F. El-Saadany, and M.M.A. Salama, "A Novel Problem Formulation for Directional Overcurrent Relay Coordination", Large Engineering systems Conference on Power Engineering, vol. 1, pp. 48-52, July 2004.

[199] T.H.M. El-Fouly*, E.F. El-Saadany, and A.Y. Chikhani, "Regulating Wind Turbine Output Power Utilizing MEMS Based Actuators and Sensors" IEEE Canadian Conference on Electrical and Computer Engineering (CCECE'03), 4-7 May, 2003, Montreal, Canada.

[200] I. El-Samahy*, M.I. Marei*, and E.F. El-Saadany, "A Study of the Dynamic Behavior of Switched Reluctance Motor Drive," IEEE Midwest Symposium, 27-29 Dec., 2003, Cairo, Egypt.

[201] T.H.M. El-Fouly*, and E.F. El-Saadany, "Microsensors and Microactuators: Operation, Theory and Robotics Applications" IEEE Midwest Symposium, 27-29 Dec., 2003, Egypt.

[202] S.S. Mohamed, E.F. El-Saadany, T.K. Abdel-Galil, and M.M.A. Salama "ANN- Based Technique for Fault Location Estimation Using TLS-ESPRIT", IEEE Midwest Symposium, 27-29 Dec., 2003, Cairo, Egypt.

[203] M.A. El-Dery*, E.F. El-Saadany, and M.M.A. Salama, "Novel usage of Neural Network in Parameter Identification of Sectional Winding High Frequency Transformer Model", IEEE Midwest Symposium, 27-29 Dec., 2003, Cairo, Egypt.

[204] S.S. Mohamed, E.F. El-Saadany, J. Shen, T.K. Abdelgalil, , M.M.A. Salama, D.B. Downey, K. Rizkalla, and A.Finster, Dec. 2003, "Region of interest identification in prostate TRUS images based on Gabor filter", IEEE Midwest Symposium, 27-29 Dec., 2003, Cairo, Egypt.

[205] H.H. Zeineldin*, and E.F. El-Saadany, "Capacitor Commutated Converter Using an Adaptive Active Capacitor for HVDC System", IEEE Canadian Conference on Electrical and Computer Engineering (CCECE'03), 4-7 May, 2003, Montreal, Canada

[206] T.H.M. El-Fouly*, E.F. El-Saadany, and M.M.A. Salama, "Compensation for Load and Speed Variation of Self-Excited Induction Generator", IEEE Canadian Conference on Electrical and Computer Engineering (CCECE'03), 4-7 May, 2003, Montreal, Canada.

[207] M.A. Eldery*, E.F. El-Saadany, and M.M.A. Salama, "Parameters Identification of Sectional Winding High Frequency Transformer Model Using Neural Network"; IEEE Midwest Symposium, 27-29 Dec., 2003, Cairo, Egypt.

[208] M.I. Marei*, E.F. El-Saadany, and M.M.A. Salama, "Dynamic Performance of an Enhanced STATCOM Current Control Scheme for Reactive Power Compensation," IEEE Canadian Conference of Electrical and Computer Engineering CCECE, vol. 1, pp. 359 – 362, 4-7 May, 2003, Montreal, Canada.

[209] S.S. Mohamed, T.K. Abdel Galil, E.F. El-Saadany, M.M.A. Salama, A. Fenster, D.B. Downey, K. Rizkalla, and M. Kamel "Prostate cancer diagnosis based on Gabor filter texture segmentation of ultrasound image" IEEE Canadian Conference on Electrical and Computer Engineering (CCECE'03), 4-7 May, 2003, Montreal, Canada

[210] E.F. El-Saadany, "Effectiveness of Different Methodologies in Harmonic Distortion Mitigation", IEEE Canadian Conference on Electrical and Computer Engineering (CCECE'01), 13-16 May, 2001, Toronto, Canada.

[211] E.F. El-Saadany, T.K. Abdel-Galil, and M.M.A. Salama, "Medium Voltage Industrial Distribution System Power Quality Assessment Utilizing Multi-Resolution Decomposition Techniques", IEEE Canadian Conference on Electrical and Computer Engineering (CCECE'01), 2001, Toronto, Canada.

[212] E.F. El-Saadany, T.K. Abdel-Galil, and M.M.A. Salama, "Application of Wavelet Transform for Assessing Power Quality in Medium Voltage Industrial Distribution Systems", IEEE Transmission and Distribution Conference (TD'01), 28 October- 2 November 2001, Atlanta, USA.

[213] T.K. Abdel-Galil, E.F. El-Saadany, and M.M.A. Salama, "Implementation of Different Mitigation Techniques for Reducing Harmonic Distortion in Medium Voltage Industrial Distribution Systems" IEEE Transmission and Distribution Conference (TD'01), 28 October 2001, Atlanta, USA.

[214] E.F. El-Saadany, and M.M.A. Salama , "Sensitivity Analysis for Reactance One-Port Compensators in Non-Linear Distribution Systems" Large Engineering Systems Conference on Power Systems (LESCOPE'98), pp.101-106, June 6-9, Halifax, Canada.

[215] E.F. El-Saadany, M.M.A. Salama, and A.Y. Chikhani, "Comparing Reactance One-Port and Notch Filters for Voltage and Current Harmonic Reduction in Non-Linear Distribution systems" IEEE Canadian Conference on Electrical and Computer Engineering (CCECE'98), pp.320-328, May 21-26, Waterloo, Canada.

[216] E.F. El-Saadany, M.M.A. Salama, and A.Y. Chikhani, "Minimization of Harmonic Current Produced by Single-Phase Non-Linear Loads Using Passive Filters", 59th American Power Conference (APC'97), pp.475-480, April 10-14, 1997, Chicago, USA.

(vi) <u>Technical reports</u>: (11)

[1] Y.M. Atwa*, E.F. El-Saadany, and M.M.A. Salama, "Short-term Output Sensitivity Analysis using Probabilistic Approach for Seamless Integration of Wind and Solar PV Distributed Generation"; Final Report, Hydro One Networks, September 2008.

[2] Y.M. Atwa*, E.F. El-Saadany, and M.M.A. Salama, "Optimal Distributed Generation Mix for Enhanced Distribution System Operation", Final Report, Hydro One Networks, June 2008.

[3] Y.M. Atwa*, E.F. El-Saadany, and M.M.A. Salama, "Distribution Systems Planning Impacts Under "Plug and Play" Small Dispersed Generation", Final Report, Hydro One Networks, October 2007.

[4] T.K. Abdel-Galil, A.E.B. Abu-Elanien, E.F. El-Saadany, A. Girgis, Y. A.-R. I. Mohamed, M.M.A. Salama, and H.H. Zeineldin, "Protection Coordination Planning with Distributed Generation, " Natural Resources Canada (NRCan), CETC Varennes, Energy Technology and Programs Sector, http://cetc-varennes.nrcan.gc.ca/¯chier.php/codectec/En/2007-149/2007-149e.pdf, June 2007.

[5] Y. A.-R. I. Mohamed*, E.F. El-Saadany, M.M.A. Salama, and D. Fuller, "New monitoring and diagnosis tools for medium- and high-voltage circuit breakers, " Final Report, ABB Inc., University of Waterloo, NSERC Contract, December 2007.

[6] Y. A.-R. I. Mohamed*, E.F. El-Saadany, and M.M.A. Salama, "Circuit breaker modeling and diagnosis," Final Report, ABB Inc.-University of Waterloo, Nov. 2006.

[7] A.Y. Chikhani, E.F. El-Saadany, and M.M.A. Salama, January 2000, "Harmonics causes and effects in distribution systems," submitted to Military Engineering Research Group, RMC, Kingston, Ontario, Canada.

[8] A.Y. Chikhani, E.F. El-Saadany, and M.M.A. Salama, November 1999, "Mitigation of Harmonics Generated by PWM based Adjustable Speed Drives Utilizing Reactance One-Port Compensators," submitted to Military Engineering Research Group, RMC, Kingston, Ontario, Canada.

[9] A.Y. Chikhani, E.F. El-Saadany, and M.M.A. Salama, Jan. 1998, "Investigation of system parameters affecting the harmonic distribution systems loaded with non-linear loads," submitted to Military Engineering Research Group, RMC, Kingston, Ontario, Canada.

[10] A.Y. Chikhani, E.F. El-Saadany, and M.M.A. Salama, Jan. 1997, "Passive filter design for harmonic reactive power compensation in single phase circuits supplying non-linear loads," submitted to Military Engineering Research Group, RMC, Kingston, Ontario, Canada.

[11] A.Y. Chikhani, E.F. El-Saadany, and M.M.A. Salama, April 1996, "Effect of interactions between voltage and current harmonics on the net harmonic current produced by single-phase non-linear load," submitted to Military Engineering Research Group, RMC, Kingston, Ontario, Canada.

d) *Fellowships and Awards:*

TITLE & INSTITUTION	DATES
Research Excellence Award, Faculty of Engineering, University of Waterloo.	Nominated, 2009
NSERC Canada Research Chair in energy systems for contributions on distributed generation	January 2009
Early Research Award; Providence of Ontario, Canada	July 2007
James A. Field Teaching Excellence Award, University of Waterloo, Ontario, Canada	June 2006
Jim & Diana Memorial Leadership Award, Waterloo, Canada	September 1997

e) *Grants and Contracts:*

HOLDERS	TITLE & INSTITUION	AMOUNT (CD)	SHARE (CD)	DATES
E. F. El-Saadany	"Distributed Generation Seamless Integration into Existing Distribution Systems," NSERC, CRC Grant.	$500,000	$500,000	2009-2013
E. F. El-Saadany	"Distributed Generation Seamless Integration into Existing Distribution Systems," NSERC, CFI Grant, Canada	$150,000	$150,000	2009
E. F. El-Saadany	"Distributed Generation Seamless Integration into Existing Distribution Systems," ORF-RI, Leaders Opportunity Fund, Canada	$150,000	$150,000	2009

E. F. El-Saadany (PI) and M.M.A. Salama	"Optimal Distributed Generation Mix for Enhanced Distribution System Operation," Hydro One, Research contract, Canada.	$35,000	$30,000	2008
E. F. El-Saadany (PI) and M.M.A. Salama	"Short-term Output Sensitivity Analysis using Probabilistic Approach for Seamless Integration of Wind and Solar PV Distributed Generation," Hydro One, Research contract, Canada.	$25,000	$20,000	2008
E. F. El-Saadany (PI) and M.M.A. Salama	"Distributed Generation Seamless Integration into Existing Distribution Systems," NSERC, CRD Grant, Canada.	$62,006	$50,000	2008-2009
E. F. El-Saadany and M.M.A. Salama (PI)	"Assessing the Impacts of Fixed Speed Wind Turbine-Based Distributed Generation on Voltage Dynamics in Distribution Feeders," Hydro One, Research contract, Canada.	$27,500	$13,500	2008
E. F. El-Saadany and M.M.A. Salama (PI)	"Assessing the Impacts of Distributed Generation on the distribution system transformers," Hydro One, Research contract, Canada.	$27,500	$13,500	2008
Ehab El-Saadany	Support for grad students from MEng Power Eng. Program, University of Waterloo, Canada.	$21,600	$21,600	Nov. 2008-today
R. Varma and M. Salama (PIs) and 14 others	"Large-Scale Photovoltaic Solar Power Integration in Transmission and Distribution Networks," OCE- Hydro One-Opti Solar-London Hydro, Research Grant, Canada.	$6,153,560	$147,264	2008-2011
E. F. El-Saadany (PI) and M.M.A. Salama	"Distribution Systems Planning Impacts Under "Plug and Play" Small Dispersed Generation," Hydro One, Research contract, Canada.	$49,000	$40,000	2007
Ehab El-Saadany, D. Fuller and M.M.A. Salama (PI)	"SF6 Circuit Breaker Modeling and Diagnosis for Predictive Maintenance," NSERC, CRD Grant, Canada	$46,800	$23,400	2007-2008

Ehab El-Saadany	"Distributed Generation Option for Optimum Electricity Systems," NSERC, Discovery Grant, Canada.	$147,500	$147,500	2007-2011
Ehab El-Saadany	"Operation and Control of Distribution Systems Micro Grids," ERA Grant, Ontario Government, Canada.	$140,000	$140,000	2007-2012
Ehab El-Saadany	"Operation and Control of Distribution Systems Micro Grids," ERA Grant match, University of Waterloo, Canada.	$50,000	$50,000	2007-2012
E. F. El-Saadany and M.M.A. Salama (PI)	"SF6 Circuit Breaker Modeling," ABB Inc., Contract, US.	$29,000	$14,500	2006
E. F. El-Saadany (PI) and M.M.A. Salama	"On-Line Monitoring and Diagnosis for Preventive Maintenance of High and Medium Voltage Circuit Breakers," NSERC, CRD Grant, Canada.	$44,460	$33,345	2006-2007
E. F. El-Saadany and M.M.A. Salama (PI)	"On-Line Monitoring and Diagnostics of MV and HV Circuit Breakers," ABB Inc., Contract, US.	$27,150	$13,575	2005
E.F. El-Saadany, M.M.A. Salama (PI), and G.H. Freeman	"Knowledge - Based Assistive Device for Narcoleptic Patients," NSERC, Collaborative Health Research Grant, Canada	$306,420	$153,210	2004-2006
Ehab El-Saadany and M.M.A. Salama (PI)	"Electric and Magnetic Field Guideline Evaluation and Magnetic Field Exposures for Life-Line Networks", RI-KFUPM, Saudi Arabia, research contract.	$96,700	$48,350	2004-2005
Ehab El-Saadany	"Distributed Energy Resources Interactions and Interfacing," NSERC, equipment grant, Canada.	$44,385	$44,385	2004
Ehab El-Saadany, M.M.A. Salama (PI) and 4 others	"Development and Validation of 3-D Ultrasound Imaging for Diagnosis and Managment of Prostate Cancer," NSERC Collaborative Health Research, Canada.	$258,720	$77,616	2002-2004

Ehab El-Saadany	"Power Quality Assessment in Deregulated Environment," NSERC Individual Research Grant, Canada.	$156,075	$156,075	2002-2006
E. F. El-Saadany	E&CE Dept. Start-up Grant, Univ. Waterloo.	$25,000	$25,000	2000
	TOTAL	$8,573,376	$2,062,820	

f) Invited Talks and Seminars: 14

1. Distributed Generation; Invited half day workshop; 2nd International Conference on Electric Power and Energy Conversion Systems, 15-17 November 2011, Sharjah, UAE.
2. Distributed Generation; Between Benefits and Challenges" invited seminar, IEEE Power & Energy Society Dubai Chapter, American University in Sharjah, October 21, 2009.
3. "Distributed Generation; an Overview" invited seminar, IEEE Power & Energy Society Toronto Chapter, June 11, 2009.
4. "Electricity Generation and Distributed Generation", invited seminar, Youth outreach program, University of Waterloo, May 26, 2009.
5. "Distribution System Power Quality; Problems and Solutions", invited tutorial, International Conference and Computer, Communication and Power, Muscat, Oman, February 15, 2009.
6. "Distributed Generation; Between Benefits and Challenges", Keynote speech, International Conference and Computer, Communication and Power, Muscat, Oman, 17, 2009.
7. "Distribution Generation (DG); Merits and Challenges", invited seminar, Petroleum Institute, UAE, January 25, 2009.
8. "Distribution System Power Quality and Distributed Generation", invited workshop, Scientific Research Outlook, Fes, Morocco October 26, 2008.
9. "Distributed Generation Utilization for Optimum Electricity Energy System Operation", invited seminar, Ain Shams University, Cairo, Egypt, December 12, 2005.
10. "Distribution Systems Power Quality Assessment and Improvement Mechanisms", invited seminar, Petroleum Institute, UAE, July 25, 2005.
11. "Power Engineering Research at Waterloo," ABB US Corporate Research, Raleigh, NC, USA, March 15, 2005.
12. "Distribution System Research Directions", presentation for ABB corporate, University of Waterloo, Canada, December 9, 2004.
13. "Assessing and Mitigating Power Quality Problems in Deregulated Environment", University of Waterloo, Canada, July 19, 2002.
14. "Quantifying and Mitigating Power Quality Problems", invited seminar, American University in Sharjah, UAE, March 22, 1999.

3. TEACHING

a) ***Courses Taught:***

A summary by course for the results from teaching critiques are given in the following sections.

COURSE	TERM	EVAL/100 Q1-9§ Q10§	Class Size	LEVEL	COMMENTS
ECE 6603PD: Electromagnetic Compatibility and Power Quality	Fall 10 Fall 08 Fall 06 Fall 04	NA NA NA	25	Grad	Course for on-line M.Eng. Power Engineering program (http://www.ece.uwaterloo.ca/Graduate/PowerMEng/).
ECE 6604PD: Distributed Generation	Fall 2011 Fall 09 Fall 07 Fall 05	NA NA	50 28	Grad	Course for on-line M.Eng. Power Engineering program (http://www.ece.uwaterloo.ca/Graduate/PowerMEng/).
ECE 667: Sustainable Distributed Generation	Fall 2011 Fall 2010 Fall 08 Fall 07	79.5 83 NA NA	19 18	Grad	New course for the Power Group.
ECE 670 Topic 3: Distribution System Power Quality	Fall 05 Fall 04	NA NA	5 14	Grad	New course for the Power Group covers various issues associated with power quality definitions, indices, monitoring, classification and mitigation.
MTE120**: Circuits	Spring 08 Spring 07 Spring 06 Spring 05 Spring 04	88.8 95 89.6 92 87.4 93 90.1 94 90.4 96	126 118 120 117 113	Undergrad	New Introductory course in electromagnetism, circuits and electronic devices for Mechatronics Engineering students. Developed new labs and curriculum.
MTE320: Actuators and Power Electronics	Spring 11 Spring 08 Spring 07 Spring 06	90.5 93 85.2 90 91.8 95 91.0 96	108 102 96	Undergrad	New course for Mechatronics Engineering students that introduces different concepts of machine drives and their control. Developed new labs and curriculum.
ECE 261: Energy Systems.	Fall 06 Fall 05 Fall 04 Fall 03 Fall 02	84.9 85 85.1 88 82.3 82 88.4 91 80.9 77	117 119 110 127 99	Undergrad	New labs have been implemented.
ME 269: Electromechanical Devices and Power Processing	Fall 04 Fall 01	72.6 68 70.3 67	105 92	Undergrad	Service course for Mechanical Engineering. Students are introduced to different machines and control concepts.
GENE/ME 123**: Electrical Engineering	Spring 02 Spring 01 Winter 01 Spring 98	78.7 77 70.3 70 76.6 66 82.5 85	90 56 33 36	Undergrad	Service course for Mechanical, Civil and Chemical Engineering. Curricula and textbooks have been changed several times.

ECE 100[#]: Fundamentals of Electrical Engineering	Spring 03 Spring 02 Spring 01 Winter 01	89.3 87 94.3 84.6	93 92 98 84	105 127 97 96	Undergrad	Introductory course in electromagnetism, circuits and electronic devices for Electrical and Computer Engineering students (double credit course).

[*] Indicates first year level course taught to electrical engineering students

[**] Indicates first year level course taught to out of the department students

[#] ECE100 is a double credit course with 8 contact hours per week.

[§] Questions 1 to 9 on the course critique cover the components of teaching, such as organization, clarity, presentation, and class-professor relationship. Question 10 rates the overall quality of teaching, and question 17 rates the overall value of the course.

Before joining the University of Waterloo: two years of teaching experience as an Assistant Professor at Ain Shams University, Cairo, Egypt, where undergraduate Electric Machines and Power Systems courses, including labs, where completely restructured.

b) ***Curriculum Development:***

1) MTE 120 (Circuits); 1st year undergraduate Mechatronics core course: Developed complete lecture notes, lab manuals and CDT. The course weight increases to 0.75 credit starting Spring 2008.

2) ECE 760, Topic #3(Electromagnetic Compatibility and power Quality); Graduate course: I have developed this new graduate course with complete lecture notes and set of 800 slides.

3) ECE 6603PD, (Power Quality Issues); Graduate course for the on-line power MEng program: I have developed this graduate course with complete lecture notes and set of 750 slides.

4) ECE 6604PD, (Distributed Generation); Graduate course for the on-line power MEng program: I have developed this graduate course with complete lecture notes and set of 800 slides.

5) MTE 320 (Actuators and Power Electronics); 3rd year undergraduate Mechatronics core course: Developed complete lecture notes and lab manuals.

6) ECE 667 (Sustainable Distributed Generation)**;** Graduate course: Developed for the new sustainable energy MEng. I have developed the course with complete lecture notes and set of 700 slides.

c) Thesis Supervision

In most cases, I have been the *main research supervisor*, given the status of the other professors and/or funding arrangements (see paper authorship).

Summary:

Total PhD Students supervised and graduated as of Jan. 1, 2012: 10
Total MS Students supervised and graduated as of Jan. 1, 2012: 8
Total PhD Students under present supervision, as of Jan. 1, 2012: 8
Total MS Students under present supervision, as of Jan. 1, 2012: 4
Total PDF and Visiting Professors supervised: 9
Total Undergraduate Students Mentored (under various mechanisms): 18
Total PhD and MS Defence Examination Committees Served: 20

Name	Degree	Dates	Comments
Ali Hooshayer	PhD	Sept 11- Present	Distribution System Protection
Elham	PhD	Sept 11- Present	DG data mining
Maher Azzoz	PhD	Sept 11- Present	Wind Fault ride through
Omar Faqhruedin	MASc	Sept 11- Present	Islanding Detection
Mohamed Essam	MASc	Sept 10-Present	DG reliability
Mostafa Shaaban	PhD	May 10- Present	PEV planning
Morad AbdelMegid	PhD	May 10- Present	Microgrid Stability
Ayman Zienelabdeedn	MASc	May 10- Present	Unit commitment under uncertainty
Hatem Sindi	MASc	May 10- Present	Unified reliability index
Aboelsood Zidan	PhD	May 09- Present	Research: Control and operation of smart grids.
Hany Farag	PhD	Jan 09- Present	Research: Multi-agent techniques for micro grid operation and control.
Rashid Alabri	PhD	Sept 07- Present	Thesis: "Voltage Stability and Power Quality Analysis with High DG Penetration."
Graduated Students			
Mhammedreza Fakhari	MASc	May 10-Dec 11	Frequency Regulation using Artificial Inertia
Ahmed Khalifah	MASc	Sept 08-Dec 10	Thesis: Control and Interfacing of Three-phase Grid Connected Photovoltaic Systems
Meghana mukerji	MASc	Sept 08-Apr 11	Research: Smart sensors. Co-supervisor: M.M.A. Salama
Yasser Atwa	PhD	Jan 06-Jan 10	Thesis: "Distribution system planning strategies and operation issues under high DG penetration levels".
Mohamed AlBadi	PhD	Jan 06-Jan 10	Thesis: "Wind power: economical valuation and power management."
Mohamed Mahmoud	PhD	Sept 04 – March 10	Thesis: "Planar electret based electrostatic micro-generator." Co-supervisor: R. Mansour
Mostafa Soliman	PhD	Jan 04- Aug 09	Thesis: "Electromagnetic micro-power generator, analysis, design and simulation." Co-supervisor: R. Mansour Currently working as a PDF at University of Waterloo.
Yasser Mohamed	PhD	May 06-Oct 08	Thesis: "A Robust voltage-sourced inverter-based interface for distributed energy resources in grid-connected and micro-grid systems." Currently working as a PDF at University of Waterloo, and will start his tenure as Assistant Professor at University of Alberta on Sept 09.

Ali Alaboudy	PhD	Jan 06-Nov.08	Thesis: "Power conditioning and performance enhancement of wind-based distributed generation." Co-supervisor: H. El-Tamaly Currently working as an Assistant Professor at Minia University, Egypt.
Hani Fadali	MASc	May 06-May 08	Thesis: "Fuel cell distributed generation: power conditioning, control and energy management." Currently working as a power system engineer at Smith and Andresen Consultant, Toronto, On.
Oliver Romaniuk	MASc	Sept 06-Aug 08	Thesis: "Designing a real-time grid simulator for use in market and A.G.C. studies." Currently a PhD student at UW.
Tarek El-Fouly	PhD	Sept.02-May 07	Thesis: "Wind farms production: control and prediction." Co-supervisor: M.M.A. Salama. Currently working as a senior engineer with NRCan, Montreal, Canada.
Mike Chen	MASc	Sept.04-Aug 06	Thesis: "Fuel cell based distributed generation; modeling, operation, and economic evaluation" Currently an R&D Engineer at the New York Power Authority, White Plains, NY, USA.
Mohamed Eldery	PhD	Jan 03-Aug 06	Thesis: "Retrofit Control to Prevent ASD Premature trips Due to Power Quality Problems". Co-supervisor: M.M.A. Salama. Currently a senior researcher at Honeywell, Toronto, Canada
Hatem Zieleldin	PhD	Sep 02-Aug 06	Thesis: "Distributed Generation Micro-grid Operation: Control, Protection, and Electricity Market Operation." Co-supervisor: M.M.A. Salama. Currently an assistant professor at Masdar, UAE.
Salam Gabran	MASc	Sep 04-Aug 06	Thesis: "Design Optimization Methodology of Sub-dermal Electroencephalography Dry Spiked Electrode Array." Co-supervisor: M.M.A. Salama. Currently a PhD student, University of Waterloo.
Ismeil El-Samahy	MASc	Sep 02-Aug 04	Thesis: "Simulation and control of a four-quadrant switched reluctance motor drive for high performance applications." Currently a senior researcher at IESO, Toronto, Canada.

Mostafa Marei	PhD	May 01-Apr 04	Thesis: "Novel control algorithms for inverter-based custom power conditioners." Co-supervisor: M.M.A. Salama. Currently an assistant professor at Ain Shams University, Cairo, Egypt.

d) *Research Fellow Supervision:*

Name	Status	Dates	Comments
Mostafa Soliman	Postdoc	Sept 09- Aug 10	• Research: MEMS fabrication of micro-power generators.
Mohammed Essam	Visiting Scholar (MAsc)	May 08-Aug 09	• Researcher, Catania University, Italy. • Research: Supply adequacy evaluation in distribution systems with high PV-based DG penetration using Monte Carlo simulation.
Yasser Mohamed	Postdoc	Jan 09- Sept 09	• Research: Dynamic interactions in micro grids with different DG technologies.
Huo Limin	Visiting Prof	Mar 09-Sept 09	• Assistant Professor on sabbatical leave from the College of Mechanical and Electrical Engineering, Agriculture University of Hebei, Baoding, China. • Research: reliability improvement mechanisms in distribution systems with high distributed generation penetration levels.
Anne-Claire Guise	Visiting Scholar (MAsc)	May 08-Sept 09	• Scholar, France. • Research: DG availability using Monte Carlo simulation.
Yanghua Liu	Visiting Scholar (PhD)	May 08-May 09	• Assistant Lecturer at the Department of Electrical and Information Engineering, Hunan University, Changsha, China. • Research: System reconfiguration in smart grids.
Abdullah H. Al-Badi	Visiting Prof.	Aug 06-Aug 07	• Assistant Professor on sabbatical leave from Sultan Qaboos university, Sultanate of Oman Research: Hybrid operation of different distributed generation
Tarek Abdel-Galil	Postdoc	June 03-Oct 04	• Senior researcher; King Fahd University for petroleum and Minerals, Saudi Arabia. • Research: Power Quality events detection and classification. • Co-supervisor: M.M.A. Salama
Ali H. Kassem	Visiting Scholar (PhD)	Sept 06-Aug 08	• Lecturer at the Department of Electrical Power Engineering, Menia University, Egypt. • Research: Wind based DG operation and control.

e) *Undergraduate Student Supervision:*

Names	Dates	Comments
Bassem Ebeid	June 09-Sept09	Intern from the American University of Cairo, Egypt. "Multi-agent control for smart grids".
Lukasz Koziol* Michael Orfao* Adam Yang* Sandy Chow*	Sept 2007-Jan 2008	ECE492; ECE 4th year project: "Intelligent electricity receptacle".
Natali El-Nabout	June 2005-Aug 2005	Intern from American University of Beirut: Feature Selection Algorithms.
Phoebe Su** Marie Dube** Wei-Chang Yen** Shuo-Chun Kao**	Sept 2004-May 2005	ECE492; ECE 4th year project: Design and construction of a 1.5kW fuel cell test station.
J. Robinson** H. Fadali** G. Lockwood** Y. Lambert**	Jan 2004-May 2004	ECE492; ECE 4th year project: "Power of Tomorrow: Hydrogen".
Layya Halawi	June 2004-Aug 2004	Intern from American University of Beirut: Statistical Feature Extraction.
John Cuddihy Sara Ehrhardt Emily Thorn*	Sept 2002-May 2003	SYDE 461, 4th year systems design project: "From Mega-Plants to Energy Webs: Fuel Cells and Distributed Generation".

* Indicates that this student had previously taken one undergraduate course for which I was the instructor.

** Indicates that this student had previously taken two undergraduate courses for which I was the instructor.

§ E&CE 492 is a two-term 4th year project course. SYDE 461 is the corresponding offering from the Systems Design Dept.

4. SERVICE

a) Department Service:

- Director; Power MEng program
- Member; Graduate accreditation committee
- Member; Graduate Student Committee
- Member; ATC MEng Power Program Steering Committee, September 2008-present.
- Certificate Leader; (Sustainable Energy MEng), 2007-present.
- MEng. Development Committee, 2006-2008.
- Lecturer Task Force Committee, 2005.
- Secretary; Electrical and Computer Engineering Power Group, 2004-2009.
- Member; Mechatronics Course Development Committee, 2003-2008.
- Member; Electrical and Computer Engineering Graduate Studies Committee, 2003-2006.
- Member; Electrical and Computer Engineering Undergraduate Planning Committee, 2003-2005.
- Secretary; Department Advisory Committee for Appointment (DACA): Lecturer, 2000-2002.

b) Thesis Examination:

- Examiner of PhD proposal and thesis by M. Chehreghani, University of Waterloo, July 2009 and Sept 2011.
- Examiner of PhD proposal and thesis by M. Mahdy, University of Waterloo, March 2009 and January 2012.
- Member of the Examining Committee of A. Algarni's PhD thesis, University of Waterloo, December, 2008.
- Member of the Examining Committee of S. Ameer's PhD thesis, University of Waterloo, November, 2008.
- Member of the Examining Committee of I. El-Samahy's PhD thesis, University of Waterloo, April, 2008.
- Examiner of PhD proposal by A. Algarni, University of Waterloo, April 2007.
- Reader of MASc thesis by A. Leung, University of Waterloo, 2007.
- Member of the Examining Committee of H. Zareipour's PhD thesis, University of Waterloo, November, 2006.
- Reader of MASc thesis by C. Yiu, University of Waterloo, 2006.
- Examiner of PhD proposal by I. El-Samahy, University of Waterloo, April 2006.
- Examiner of PhD proposal by H. Zareipour, University of Waterloo, July 2004.
- Reader of MASc thesis by W. King, University of Waterloo, March 2004.
- Member of the Examining Committee of T.K. Abdel-Galil's PhD thesis, University of Waterloo, December, 2003.
- Examiner of PhD proposal by T.K. Abdel-Galil, University of Waterloo, July 2001.

c) Others:

- Class Prof. for the 2002-2007 Electrical Engineering classes.
- Class-Professor for the 3A Mechatronics students, Spring 2007.
- Class-Professor for the 3A Mechatronics students, Spring 2008.

d) University and Faculty Service:

- Faculty Nominations Committee, January 2005- December 2006.
- E&CE Representative to the Engineering Faculty Council, January 2005- December 2006.

- Mentor, ExpecTAtions, 2009- Present.

5. PROFESSIONAL ACTIVITIES

a) Societies, Journals and Conferences:

- Senior member of the IEEE 2005-present.
- Member, Power Engineering Society (PES), 1998-present.
- TPC Member, International Conference on Signals, Circuits and Systems (SCS 2009), November 6-9, 2009, Djerba, Tunisia.
- TPC Member, International Conference on Electric Power and Energy Conversion Systems (EPECS), November 10-12, 2009, Sharjah, UAE.
- TPC Member, Power and Energy Systems (AsiaPES), 2007.
- Member Program Advisory Committee, School of Technology, Conestoga College, 2008-present.
- Member of the IEEE-PES Power System Harmonics Subcommittee since 2006.
- Registered Professional Engineer in the Province of Ontario since 2006.

b) Refereeing and Reviewing for Journals:

- Regular reviewer for various journals and conferences, notably:
  - IEEE Transactions on Power Systems.
  - IEEE Transactions on Power Delivery.
  - IEEE Transactions on Energy Conversion.
  - IEEE Transactions on Power Electronics.
  - IEEE Transactions on Industrial Electronics.
  - IET Journal (formerly IEE Proceedings) Generation, Transmission & Distribution.
  - International Journal of Electrical Power & Energy Systems.
  - Electric Power Research.
  - International Journal on Power Electronics.
  - IEEE PES General Meeting.
- Reviewer of grant proposals for Qatar National Research Foundation since 2007.
- Reviewer of grant proposals for NSERC since 2001.