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EDUCATION

- 1999 **Ph.D. in Electrical Engineering**
University of Wyoming, Laramie, WY
- 1995 **Master of Science in Electrical Engineering**
University of Wyoming, Laramie, WY
- 1992 **Bachelor of Science in Electrical Engineering**
University of Wyoming, Laramie, WY

PROFESSIONAL QUALIFICATIONS

- June 2007-
present **Registered Professional Engineer, State of Alaska, Electrical Engineering**, License #: 11793

TEACHING/INSTRUCTION

- Jul 2006-
present **Associate Professor, University of Alaska-Fairbanks, Electrical and Computer Engineering**
Power and Controls Option
Advising and instruction at the undergraduate and graduate level in Power and Controls.
- Aug 1999-
Jul 2006 **Assistant Professor, University of Alaska-Fairbanks, Electrical and Computer Engineering**
Power and Controls Option
Advising and instruction at the undergraduate and graduate level in Power and Controls.
Courses include: Electric Machinery (EE 303), Power Systems (EE 404 and EE 406), Power Electronics (EE 408 and 608), Digital Control Systems (EE 671), and special topic courses in Adaptive Filtering, Nonlinear Systems, and Renewable and Sustainable Energy Systems (EE 693).
- Summer 2002-
2007 **Alaska Summer Research Academy, University of Alaska-Fairbanks**
Lead instructor for junior high and high school students for Electrical Engineering unit dealing with power and energy.
- Spring 1999 **Assistant Lecturer, University of Wyoming, Electrical Engineering**
Instructor for senior Electrical Engineering course in Power Systems.
- Summer 1993,
Summer 1995 **Engineering Summer Program, University of Wyoming, Electrical Engineering**
Assistant instructor for program to expose high school juniors to the various engineering disciplines.
- Spring 1993-
Fall 1998 **Teaching Assistant, University of Wyoming, Electrical Engineering**
Instructor for laboratories in lower and upper level engineering courses including: Introduction to Engineering Problem Solving, Circuits, Electromechanics, and Automatic Control Systems.

RESEARCH EXPERIENCE

- Aug 1999-
present **Principal Investigator, University of Alaska-Fairbanks, Institute of Northern Engineering**
- 1) Alaska Energy Authority Emerging Energy Technology Fund (Sep 2012-Dec 2013)
Self-Regulated Wind Diesel Grid Using Electric Thermal Storage Units
-Development of grid regulation controls for electric thermal heaters in wind-diesel power plants in Alaska remote communities.

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- 2) Alaska University Transportation Center (Sep 2012-Aug 2013)
 - Review of Power Sources for Alaska DOT Road Weather Information Systems (RWIS): Phase I*
 - Explore possibilities for replacing currently used power generation and monitoring equipment at remote off-grid RWIS sites with technology that is state-of-the-art.
 - LED Street Lights in Alaska* (Jan 2010-Sep 2010)
 - Testing and analysis of LED street lights for roadway applications in Alaska.
- 3) Alaska Energy Authority (May 2010-May 2013)
 - Improving the Energy Efficiency of Alaska Seafood Processing Plants*
 - Development of energy efficiency testing procedures and kits to study the energy efficiency of seafood processing plants in Alaska.
- 4) US DOE Arctic Energy Technology and Development Laboratory (Jun 2002-Sep 2008)
 - Effects of Village Power Quality on Fuel Consumption and Operating Expenses*
 - Development of an electric power quality monitoring and evaluation system for villages in remote rural Alaska in conjunction with Alaska Energy Authority and rural utilities.
 - Polar Regions Hybrid Remote Power Stations* (Jun 2004-Jun 2006)
 - Development of hybrid power systems for remote power applications in polar regions.
- 5) US DOE EPSCoR (Jun 2003-May 2007)
 - Advanced Techniques for Power System Identification from Measured Data*
 - Continuation of Ph.D. research with DOE EPSCoR funding under a subcontract with the University of Wyoming.
- 6) NSF CCLI (Jun 2003-Jun 2005)
 - A Novel Approach in Improving Power Electronics and Electric Drives Courses, Curriculum, and Laboratories: Multi-University Adaptation and Implementation*
 - Development and implementation of a novel Power Electronics and Electric Drives classroom and laboratory curriculum at UAF in collaboration with four other universities.
- 7) Alaska EPSCoR Seed Grant (Jun 2001-Jun 2002)
 - Development and Implementation of Self-Sustainable Hybrid Power System Technologies in Cold Regions*
 - Development of a research base leading to the submission of a full proposal to the US DOE National Energy Technology Lab for external funding.

Aug 1999-
present

Co-Principal Investigator, University of Alaska-Fairbanks, Institute of Northern Engineering

- 1) US DOE EPSCOR (Jul 2013-present)
 - Sustainable Village Energy: Integration of Renewable and Diesel Systems to Improve Energy Self-Reliance for Remote Rural Alaska Communities*
 - Subtask Lead: Engineering Challenges: Distributed Controls & Smart Grid Applications
- 2) US DOE EPSCOR (Jul 2010-Jul 2013)
 - Making Wind Work for Alaska: Supporting the Development of Sustainable, Resilient, Cost-Effective Wind-Diesel Systems for Isolated Communities*
 - Subtask Lead: Wind-Diesel Technology Development: Smart Grid Applications
- 3) Alaska University Transportation Center (AUTC) (Aug 2007-Jun 2010)
 - Economical Analysis of Alaskan Street Lights by using Light-Emitting Diode (LED) Technology* (Aug 2008-Jun 2010)
 - Testing and analysis of LED street lights for roadway applications in Alaska.
 - Dust Measurement to Determine Effectiveness of Rural Dust Control Strategies* (Aug 2007)
 - Development a method for dust measurement on roads in Alaska rural areas.

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4) US DOE AETDL (Jun 2002-Dec 2004)

Galena Electric Power - A Situational Analysis (Jan-Dec 2004)

-Development of a system model for a situational analysis to determine the economics of operating the Galena power system from a nuclear power plant.

Village Power Performance Monitoring (June 2002-Nov 2004)

-Development of standardized monitoring and control systems for villages in conjunction with Alaska rural utilities.

5) NSF CISE (Oct 2004-Oct 2008)

Hardware-in-the-Loop Simulator

-Development of hardware-in-the-loop simulators (HILS) systems to allow for remote computer control and simulation of systems with the actual full-scale hardware in place.

5) US Army Tank Command (Aug 1999-Aug 2000)

Lightweight Robotic and Semiautonomous Ground Vehicle Mobility and Survivability Enhancements Program

-Design and testing of a prototype electric drive for use in unmanned ground vehicles.

Jun 2004-present

Research Participant, University of Alaska-Fairbanks, Institute of Northern Engineering

1) US DOE (Jun 2004-Dec 2005)

Amchitka Independent Assessment: Diffusion Measurements

-Development and implementation of an electrical test bed to measure the resistivity of bedrock core samples taken from the island before nuclear testing in the 1960s and 1970s.

Summer 1995-May 99

Ph.D. Dissertation, University of Wyoming, Electrical Engineering

"Use of Ambient Data for Estimating Low-Frequency Electromechanical Modes in Power Systems."

- DOE EPSCOR Research Fellow in conjunction with Battelle PNNL and Bonneville Power Administration (1995-1996).

-AWU Graduate Fellow at Battelle PNNL in Summer 96.

Spring 1995

Masters Thesis, University of Wyoming, Electrical Engineering

"The Effects of Transient Switching Harmonics from Adjustable-Speed Drives on the Communication Frequency Spectrum with Filtering Solutions as Applied to Electric Vehicles."

Fall 1992-Spring 1995

Laboratory Research, University of Wyoming, Electrical Engineering

Worked as DOE/AWU Graduate Fellow in the University of Wyoming Motor Testing and Training Center.

-Aided in the design and construction of a 300HP dynamometer.

-Performed extensive testing of motors with IEEE and NEMA standards.

-Designed and constructed a 500W mobile solar energy demonstration.

-Analyzed RFI and EMI harmonics generated by power switching circuits.

Summer 1992

Research Assistant, University of Wyoming, Electrical Engineering

Worked in conjunction with DOE Electric Motor Testing project

-Tested induction motors in the petroleum and mining industry.

-Analyzed and reported findings on energy use, efficiency and over-sizing of motors.

PUBLICATIONS (Aug 1999-Present)

BOOKS

- 1) A.N. Agrawal, R.W. Wies, and R.A. Johnson, *Hybrid Electric Power Systems: Modeling, Optimization, and Control*, VDM Verlag, 2007.

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BOOK CHAPTERS

- 1) R. W. Wies, R. A. Johnson, and A. Agrawal, *Energy-Efficient Standalone Fossil-Fuel Based Hybrid Power Systems Employing Renewable Energy Sources*, Fossil Fuel and the Environment, Dr. Shahriar Khan (Ed.), ISBN: 978-953-51-0277-9, InTech, Mar 2012.
- 2) R. W. Wies, *The Power Electronics Handbook: DC-DC Converters*, CRC Press, Boca Raton, FL, Chap. 2: Sections 1, 3-5, Nov 2001.

JOURNAL PUBLICATIONS

- 1) N. T. Janssen, R. W. Wies, and R. A. Peterson, Frequency Regulation by Distributed Secondary Loads on Islanded Wind-Powered Microgrids, *IEEE Transaction on Sustainable Energy*, vol. PP, no. 99, pp. 1-8, 2016.
- 2) B. E. Muhando and R. W. Wies, Nonlinear H_{∞} Constrained Feedback Control for Grid-Interactive WECS Under High Stochasticity, *IEEE Transactions on Energy Conversion*, vol. 26, no. 4, pp 1000-1009, 2011. (4 citations)
- 3) R. W. Wies, R. A. Johnson, and A. N. Agrawal, "Life Cycle Cost Analysis and Environmental Impacts of Integrating Wind-Turbine Generators (WTGs) into Standalone Hybrid Power Systems," *WSEAS Transactions on Systems*, iss. 9, vol. 4, pp. 1383-1393, 2005. (12 citations)
- 4) R. W. Wies, A. N. Agrawal, and T. J. Chubb, "Optimization of a PV with Diesel-Battery System for Remote Villages," *International Energy Journal*, vol. 6, no.1, part 3, pp. 107-118, 2005. (1 citation)
- 5) M. G. Anderson, N. Zhou, J. W. Pierre, and R. W. Wies, "Bootstrap-based Confidence Interval Estimates for Electromechanical Modes from Multiple Output Analysis of Measured Ambient Data," *IEEE Transactions on Power Systems*, vol. 20, no. 2, pp. 943-950, 2005. (42 citations)
- 6) R. W. Wies, R. A. Johnson, A. N. Agrawal, and T. J. Chubb, "Simulink Model for Economic Analysis and Environmental Impacts of a PV with Diesel-Battery System for Remote Villages," *IEEE Transactions on Power Systems*, vol. 20, no. 2, pp. 692-700, 2005. (93 citations)
- 7) R. W. Wies, J. W. Pierre, and D. J. Trudnowski, "Use of ARMA Block Processing for Estimating Stationary Low-Frequency Electromechanical Modes of Power Systems," *IEEE Transactions on Power Systems*, vol. 18, no. 1, pp. 167-173, 2003. (130 citations)

TASK FORCE REPORT

- 1) R. W. Wies, *Identification of Electromechanical Modes in Power Systems*, IEEE Publications, TP 462, Chap. 2: Section 4.5, Jun 2012.

CONFERENCE PROCEEDINGS

- 1) R. W. Wies, N. T. Janssen, and R. A. Peterson, Distributed Self-Sensing Secondary Loads for Frequency Regulation in Wind-Powered Islanded Microgrids, *Proceedings of the 2015 IEEE Power and Energy Society General Meeting*, Denver, CO, 2015.
- 2) N. T. Janssen, R. W. Wies, and R. A. Peterson, Improved Frequency Regulation on Hybrid Wind-Diesel Microgrids using Self-Sensing Electric Thermal Storage Devices, *Proceedings of 2014 Australian Universities Power Engineering Conference (AUPEC)*, Perth, WA, Australia, 2014.
- 3) R. W. Wies, E. Chukkapalli, and M. Mueller-Stoffels, Improved Frequency Regulation in Mini-Grids with High Wind Contribution using Online Genetic Algorithm for PID Tuning, *Proceedings of the 2014 IEEE Power and Energy Society General Meeting*, Washington, DC, 2014.
- 4) N. T. Janssen, R. W. Wies, and R. A. Peterson, Development of a Full-Scale-Lab-Validated Dynamic Simulink® Model for a Stand-Alone Wind-Powered Microgrid, *Proceedings of 2014 ASME Power Conference*, Baltimore, MD, 2014.
- 5) R. W. Wies, N. T. Janssen, and R. A. Peterson, Evaluation of Grid-Interactive Electric Thermal Storage (GETS) Heaters for Islanded Renewable Energy-Diesel Microgrids in Cold Regions, Improved Frequency Regulation in Mini-Grids with High Wind Contribution using Online Genetic Algorithm for PID Tuning, *Proceedings International Conference on Cold Climate Technology*, Narvik, Norway, 2014.

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- 6) B. E. Muhando, R. W. Wies, T. H. Johnson, and G. Holdmann, "Grid-Scale Rampable Dispatchable Storage: Cascaded Use of Advanced Battery Technology to Increase Energy Security in Alaska," *Proceedings of the 2012 IEEE Power and Energy Society General Meeting*, San Diego, CA, 2012.
- 7) R. W. Wies, B. E. Muhando, and E. Chukkapalli, "Reduced Fuel Consumption in Standalone Wind-Diesel Systems in Remote Arctic Communities using Smart Grids," *2012 Arctic Frontiers Conference: Energies in the High North*, Tromsø, Norway, 2012.
- 8) R. W. Wies, R. Peterson, and M. Sateriale, "Optimization of Electrothermal Loads in Standalone Wind-Diesel Microgrids in Remote Arctic Communities," *2012 Arctic Frontiers Conference: Energies in the High North*, Tromsø, Norway, 2012.
- 9) R. W. Wies and D. S. Pozo, "Energy-Efficient Wind-Diesel Generation Systems Employing Smart Grid Technology in Alaska Rural Villages," *2011 International Wind-Diesel Workshop*, Girdwood, AK, 2011.
- 10) R. W. Wies, R. A. Johnson, and J. D. Aspnes, "Design of an Energy-Efficient Standalone Distributed Generation System Employing Renewable Energy Sources and Smart Grid Technology as a Student Design Project," *Proceedings of the 2010 IEEE Power and Energy Society General Meeting*, Minneapolis, MN, 2010.
- 11) D.L. Barnes, R.A. Johnson, R. W. Wies, T. Marsik, C. Milne, S. Underbakke, and D. Filler, "Dust Measurements to Determine Effectiveness of Rural Dust Strategies," *Proceedings of the 14th Conference on Cold Regions Engineering, Cold Regions Engineering, Cold Regions Impacts on Research, Design, and Construction*, American Society of Civil Engineers, Duluth, Minnesota, 2009.
- 12) R. W. Wies, R. A. Johnson, and A. N. Agrawal, "Life Cycle Cost, Efficiency, and Environmental Impact Analysis for Integrating Renewable Energy Sources into Standalone Village Power Systems," *2009 CIGRÉ-PES Symposium: Integration of Wide-Scale Renewable Resources into the Delivery System*, Calgary, AB, Canada, 2009.
- 13) R. W. Wies, L. G. Brouhard, R. A. Johnson, and C. S. Lin, "Thermal-Electric Simulink® Model of Diesel Electric Generators with Economic Dispatch in Remote Standalone Systems," *Proceedings of the 2009 IEEE Power Engineering Society General Meeting*, Calgary, AB, Canada, 2009.
- 14) R. W. Wies, "Wind-Diesel Efficiency and Life Cycle Cost Analysis using Simulink®," *2009 International Wind-Diesel Workshop*, Ottawa, ON, Canada, 2009.
- 15) R. W. Wies, "Economic Dispatch and SCADA for Diesel Efficiency Improvements," *2009 International Wind-Diesel Workshop*, Ottawa, ON, Canada, 2009.
- 16) R. W. Wies, L. G. Brouhard, and R. A. Johnson, "Efficiency Improvements for Diesel Electric Generation Systems in Alaska Rural Villages through Economic Dispatch," *2008 Alaska Rural Energy Conference*, Girdwood, AK, 2008.
- 17) R. W. Wies, L. G. Brouhard, R. A. Johnson, and C. S. Lin, "Effects of Rising Electric Load and Ambient Air Temperature on Diesel Electric Generators in Alaska Rural Villages," *Proceedings of the 2007 Arctic Energy Summit*, Anchorage, AK, 2007.
- 18) R. W. Wies, R. A. Johnson, and A. N. Agrawal, "Life Cycle Cost, Efficiency and Environmental Impact Analysis for Integrating Renewable Energy Sources into Standalone Village Power Systems in Remote Arctic Climates," *Proceedings of the 2007 Arctic Energy Summit*, Anchorage, AK, 2007.
- 19) A. N. Agrawal, V. S. Sonwalkar, and R. W. Wies, "A Feasibility Analysis of Deploying Photovoltaic Array in a Remote Arctic Community," *Proceedings of the 2007 Arctic Energy Summit*, Anchorage, AK, 2007.
- 20) R. W. Wies, A. Balasubramanian, and J. W. Pierre, "Adaptive Filtering Techniques for Estimating the Low-Frequency Electromechanical Modes in Power Systems," *Proceedings of the 2007 IEEE Power Engineering Society General Meeting*, Tampa, FL, 2007.
- 21) R. W. Wies and R. A. Johnson, "Village Metering and Power Study," *2007 Alaska Rural Energy Conference*, Session T5-C, Fairbanks, AK, 2007.
- 22) R. W. Wies, J. W. Pierre, and D. J. Trudnowski, "Combining Least Mean Squares Adaptive Filter and Auto-Regressive Block Processing Techniques for Estimating the Low-Frequency Electromechanical Modes in Power Systems," *Proceedings of the 2006 IEEE Power Engineering Society General Meeting*, Montreal, Canada, 2006.

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- 23) R. W. Wies, J. W. Pierre, and D. J. Trudnowski, "Using Adaptive Step-Size Least Mean Squares (ASLMS) for Estimating Low-Frequency Electromechanical Modes in Power Systems," *Proceedings of the 2006 Probabilistic Methods Applied to Power Systems (PMAPS) Conference*, Stockholm, Sweden, 2006.
- 24) R. W. Wies, A. N. Agrawal, R. A. Johnson, and T. J. Chubb, "Implementation of a Remote Terminal Unit on a Diesel Electric Generator for Performance Analysis of Remote Power Systems in Rural Alaska," *2005 Alaska Rural Energy Conference*, Valdez, AK, 2005.
- 25) R. W. Wies, R. A. Johnson, and A. N. Agrawal, "Integration of Wind-Turbine Generators (WTGs) into Hybrid Distributed Generation Systems in Extreme Northern Climates," *2005 Alaska Rural Energy Conference*, Valdez, AK, 2005.
- 26) J. L. Benning, D. L. Barnes, R. W. Wies, and M. Razavi, "Spatial and Scalar Effects on Diffusion of Radionuclides for Amchitka Island," *Environmental and Subsurface Science Symposium*, Big Sky, MT, 2005.
- 27) R. W. Wies, R. A. Johnson, and A. N. Agrawal, "Integration of Wind-Turbine Generators (WTGs) into Standalone Hybrid Power Systems in Extreme Northern Climates," *5th WSEAS International Conference on Power Systems and Electromagnetic Compatibility*, Corfu Island, Greece, 2005.
- 28) R. W. Wies, R. A. Johnson, A. N. Agrawal and T. J. Chubb, "Using HOMER and Simulink for Long-Term Performance Analysis of a Hybrid Electric Power System in a Remote Alaskan Village," *NREL World Renewable Energy Congress VIII*, Denver, CO, 2004.
- 29) R. W. Wies, J. W. Pierre, and D. J. Trudnowski, "Use of Least-Mean Squares (LMS) Adaptive Filtering Technique for Estimating Low-Frequency Electromechanical Modes in Power Systems," *Proceedings of the 2004 IEEE Power Engineering Society General Meeting*, Denver, CO, 2004.
- 30) R. W. Wies, R. A. Johnson, A. N. Agrawal, and T. J. Chubb, "Economic Analysis and Environmental Impacts of a PV with Diesel-Battery System for Remote Villages," *Proceedings of the 2004 IEEE Power Engineering Society General Meeting*, Denver, CO, 2004.
- 31) R. W. Wies, A. N. Agrawal, T. J. Chubb and R. A. Johnson, "Simulink Model for Economic Analysis & Environmental Impacts of a Photovoltaic with Diesel-Battery System for Remote Villages," *2004 Alaska Rural Energy Conference*, Talkeetna, AK, 2004.
- 32) R. W. Wies, A. N. Agrawal, and T. J. Chubb, "Electric Power Quality of Distributed Generation Systems in Rural Alaskan Villages," *2004 Alaska Rural Energy Conference*, Talkeetna, AK, 2004.
- 33) R. W. Wies, A. N. Agrawal, and T. J. Chubb, "Optimization of a PV with Diesel-Battery System for Remote Villages," *International Conference on Electric Supply Industry in Transition*, Asian Institute of Technology, Bangkok, Thailand, 2004.
- 34) N. Zhou, J. W. Pierre, and R. W. Wies, "Estimation of Low-Frequency Electromechanical Modes of Power Systems from Ambient Measurements Using a Subspace Method," *Proceedings of the 2003 North American Power Symposium (NAPS)*, 2003.
- 35) R. W. Wies, J. W. Pierre, and D. J. Trudnowski, "Use of ARMA Block Processing for Estimating Stationary Low-Frequency Electromechanical Modes of Power Systems," *IEEE Transactions on Power Systems*, vol. 18, no. 1, pp. 167-173, 2003. *Invited paper at the 2003 IEEE Power Engineering Society General Meeting*, 2003.
- 36) R. W. Wies and A. N. Agrawal, "Integration of Wind-Turbine Generators (WTGs) into Hybrid Distributed Generation Systems in Extreme Northern Climates," *Proceedings of 2003 International Yukon Wind Energy Conference: Cold Climate Opportunities*, Whitehorse, Yukon Terr. Canada, 2003.
- 37) R. W. Wies and A. N. Agrawal, "Modeling and Optimization of Hybrid Electric Power Systems for Remote Locations in Extreme Climates," *Proceedings of the 2003 IASTED International Conference on Power and Energy Systems*, paper 379-190, pp. 241-246, 2003.
- 38) M. G. Anderson, J. W. Pierre, and R. W. Wies, "Confidence Interval Estimates for the Frequency and Damping Ratio of Electromechanical Modes using Ambient Data," *Proceedings of 2002 North American Power Symposium (NAPS)*, Tempe, Arizona, 2002.

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- 39) R. W. Wies and J. D. Aspnes, "Design of an Energy-Efficient Hybrid Power Source for Remote Locations as a Student Project," *Proceedings of the 2002 ASEE Annual Conference Proceedings*, Session 2133, paper 2002-1289, 2002.
- 40) R. W. Wies and J. W. Pierre, "Use of Least-Mean Squares (LMS) Adaptive Filtering Technique for Estimating Low-Frequency Electromechanical Modes in Power Systems," in *Electric Power Systems*, Asok Ray and Joe H. Chow, Chairs, *Proceedings of the 2002 American Controls Conference*, paper ACC02-IEEE1025, 2002. (Awarded best paper in *Electric Power Systems* session.)
- 41) R. W. Wies, J. Mitchell, S. Daniels, J. G. Hawkins, "Analysis of Electric Machines and Drive Systems for Unmanned Ground Vehicle Applications," in *Unmanned Ground Vehicle Technology II*, Grant R. Gerhart, Robert W. Gunderson, Chuck M. Shoemaker, Editors, *Proceedings of SPIE Vol. 4024*, pp. 263-272 (2000).

SCIENTIFIC AND PROFESSIONAL SOCIETY MEMBERSHIPS

- IEEE (1992-pres), IEEE Power Engineering Society (1995-pres), IEEE Power System Dynamic Stability Committee (2003-pres), Tau Beta Pi (1991-pres)

HONORS AND AWARDS

- Invited Book: *Hybrid Electric Power Systems: Modeling, Optimization, and Control* (see Book 1)
- Invited Conference and Journal Paper: 2005 WSEAS International Conference on Power Systems and Electromagnetic Compatibility (see Journal 2 and Conference 25)
- Invited Paper: 2003 IEEE Power Engineering Society Conference (see Journal 6 and Conference 33)
- Best Paper in Electric Power Systems Session: 2002 American Controls Conference (see Conference 38)

INSTITUTIONAL AND PROFESSIONAL SERVICE

- Member (Chair): UAF Electrical & Computer Engineering Faculty Search (2009-2010; 2012-2014)
- Member: UAF CEM Dean's Search Committee (Mar 2007-Jun 2008)
- Member: UAF Faculty Senate/Graduate Academic and Advisory Committee (2004-2006)
- Member (Chair): UAF CSEM and CEM Scholarship Committee (2000-present)
- Member: UAF Electrical and Computer Engineering Faculty Search Committee (2002-2003; 2009-2010)
- Journal Manuscript Reviewer: IEEE Transactions on Power Systems (1997-pres), IEEE Transactions on Education (2000-pres), International Journal of Adaptive Control and Signal Processing (2005-pres), IEEE Transactions on Generation, Transmission, and Distribution (2005-pres), IEEE Transactions on Renewable Generation (2007-pres), Progress in Photovoltaics: Research and Applications (2006-pres).
- Proposal Reviewer: NSF Science and Technology Centers: Integrative Partnerships Program (2008-2009); US Department of State Civilian Research & Development Foundation for Independent States of Former Soviet Union through International Science and Technology Center ISTC and Science and Technology Center in the Ukraine STCU (2004-2005)
- Lead Instructor (Energy Unit): Alaska Summer Research Academy (2002-2007)

PROFESSIONAL DEVELOPMENT ACTIVITIES

- Attended over 20 conferences and presented over 20 papers (1999-pres)
- Attended 12 cold regions and renewable energy related workshops
- Teaching Workshops: *Teaching Power Electronics, Electric Drives, and Power Systems* (Jan 2002, Feb 2004, Jun 2007, Feb 2008, Feb 2009, Feb 2010, Feb 2012, Aug 2012, & Feb 2013)

RESEARCH ACTIVITIES

- modeling, design, and performance analysis of renewable and sustainable energy systems
- dynamic modeling of distributed controls for standalone smart micro-grids
- application of signal processing techniques for analyzing power system stability
- development of classroom and laboratory curriculum for power systems courses