MICHAEL ELMORE
2516 Foster Valley Road
Owego, New York 13827
607.217.8023
mse@stny.rr.com

CURRENT

DIRECTOR AND VISITING ASSOCIATE PROFESSOR. Engineering Design Division, Watson School of Engineering and Applied Science, Binghamton University, Binghamton, NY. Aug. 2010 to present.

- Administration of 1st-year engineering program. Supervisor of 3 full-time lecturers, 3 part-time lecturers, 4 or 5 graduate teaching assistants, about 26 undergraduate course assistants, and the division secretary.
- Instructor for EDD 111 (Introduction to Engineering Design) and EDD 112 (Introduction to Engineering Analysis). Deliver bi-weekly, one-hour lectures, hold office hours, and advise about 300 students in each of fall and spring semesters. Instruct one of 13 weekly laboratory sessions in each of fall and spring semesters.
- Administration of sustainability engineering minor and general engineering minor. Supervisor of 1 part-time lecturer.
- Instructor for EDD 306 (Engineering Sustainable Energy) in spring term. Holds three, one-hour classes each week with about 20 students.
- American Society for Engineering Education (ASEE) Campus Representative
- Chief Advisor for Tau Beta Pi Tau Chapter. 2014 to 2018.
- Faculty Advisor for Student Chapter of National Society of Professional Engineers
- Service on Watson School Undergraduate Studies Committee and ABET Self-Study Group.
- Member of Scholars Program Advisory Board and mentor.
- Lead for first-ever (2012) and second (2018) external reviews of 1st-year engineering program. Followed ABET guidelines, including completion of self-studies in advance of visits by reviewers.

ENGINEERING EDUCATION

BINGHAMTON UNIVERSITY, Binghamton, NY. Doctor of Philosophy. Areas: Control theory and design optimization with application to power electronics. Dissertation: Advanced Design and Control Technologies for Power Electronics. Aug. 13, 2004.

SYRACUSE UNIVERSITY, Syracuse, NY. Master of Science in Electrical Engineering. May 1988. GPA 4.00.
Graduate of General Electric Advanced Course in Engineering. May 1988.

UNIVERSITY OF VERMONT, Burlington, VT. Bachelor of Science in Electrical Engineering. May 1985. GPA 3.89.

PROFESSIONAL LICENSE

Professional Engineer. Licensed and registered in New York State. License number 085478.

ENGINEERING EXPERIENCE

SYSTEMS ENGINEER SENIOR STAFF. Lockheed Martin Systems Integration, Owego, NY. Sept. 2004 to July 2010.

- Electrical System Architect for Early Manufacturing Development (EMD) phase of the Joint Light Tactical Vehicle (JLTV)
- Subject Matter Expert (SME) for JLTV Power Generation and Export Power (PGEP) system. Derived electrical power requirements. Supported review and critique of sub-contractor design. On-site support in Starnberg, Germany for system design at sub-contractor on four occasions June to Nov. 2009. Author of system integration white papers.
- Advanced capabilities installation electrical lead and electrical/power airworthiness signatory for the VH-71 presidential helicopter.
- Lead of VH-71 Electrical Power Working Group. Managed electrical power generation growth capacity per MIL-E-7016. Evaluated electrical power quality compliance of electrical utilization equipment per MIL-STD-704. Derived electrical power requirements.
- Other in-house power system and power electronic design reviews and consultations.

CONSULTING ENGINEER. May 2003 to Aug. 2004, part-time.

- Design contribution to a digital controller for BLDC motor using TMS320LF2407 DSP for E&M Power, Binghamton, New York. Design of interface between DSP evaluation module and BLDC motor. Evaluation of and modifications to generic BLDC motor control assembly code.

SENIOR PRINCIPAL SYSTEMS ENGINEER, BAE Systems, Johnson City, NY. Apr. 2001 to Apr. 2003.

- Various technical proposal support for new business capture and white paper authorships and co-authorships in response to BAAs.
- Project lead for a thyristor packaging optimization project. This work was done in partnership with the Center for Power Electronics Systems (CPES) at Virginia Tech, Blacksburg, VA.
- Simulation, circuit design and trade studies to support development of a multi-megawatt pulsed power system for a military electro-magnetic gun. On-site support at the Center for Electromechanics, University of Texas, Austin, TX.
- Hybrid Electric Vehicle projects. Design and Simulink simulation of 4-wheel drive torque sharing CLAW. Simulink/Dspace simulation of the EPA Urban Dynamometer Driving Schedule for HEV. Design of MATLAB/Simulink user-friendly GUI for HEV performance trade studies.
- Unmanned Ground Combat Vehicle (UGCV) project. Simulated Switched Reluctance Machine (SRM) in PSpice. Designed gate drive for Power Electronics Module (PEM), performed detailed power loss analysis for variable frequency operation, and evaluated PEM in laboratory.
- Other in-house power electronic design reviews and simulation consultations.

GENERAL MANAGER, Celestica Corporation, Johnson City, NY. Sept. 2000 to Mar. 2001.

- Manager of 41 electrical and mechanical engineers, technicians, engineering and facilities specialists and one manager. This site designed standard and custom DC-to-DC and AC-to-DC products for the computer and communications industry.
- Prepared and conducted employee reviews. Managed patent process for all Celestica power development sites. Conducted weekly planning meetings for product development. Coordinated proposal preparations and reviews. Guided technical strategy group.
- Supported closure of the Johnson City facility and subsequent move of personnel and equipment to the power electronics development center in Portland, OR.

STANDARD POWER PRODUCTS MANAGER, Celestica Corporation, Johnson City, NY. May 1999 to Sept. 2000.

- Development manager of 22 engineers, technicians and engineering specialists. This department designed standard DC-to-DC and AC-to-DC power products for the computer industry.
- Prepared and conducted employee reviews. Worked with employees to resolve performance issues. Provided technical support for development programs. Developed and managed Intranet for technical information and analysis tools.
- Supported new business captures with visits and presentations to prospective customers and design proposals.

POWER ELECTRONICS DESIGN ENGINEER, Celestica Corporation, Johnson City, NY. Sept. 1992 to May 1999.

- Lead engineer on development Director's staff responsible for new AC-to-DC technology development.
- Team leader for development of six high-density 300W and 600W, universal input, single output, power factor corrected, standard product AC-to-DC converters. Did detailed design of critically continuous PFC boost converters, 400VDC input to 24VDC, 36VDC and 48VDC output half-bridge converters and EMC filters. These designs have active output current sharing.
- Did detailed design for a family of six power factor corrected boost converter modules, delivering 300W, 600W, 900W and 1800W with a universal input and 600W and 900W with a high line only input to meet EN 60555-2. These were critically continuous designs.
- Wrote the specifications for all the above products and the application notes for the family of boost converters. Supported the application of the boost converters in eleven custom AC-to-DC converters.
- Designed the EMC filters for these eleven custom AC-to-DC converters to meet Class A and B FCC and CISPR 22 limits.
- Did detailed design for two power factor corrected boost converters, delivering 1100W with a universal input and 2000W with a high line only input. These were continuous designs utilizing a ZVT technique.

POWER ELECTRONICS DESIGN ENGINEER, General Electric Company, Johnson City, NY. Mar. 1987 to Sept. 1992.

- Team leader for commercial jet engine control power supply design. Technical lead for 5 junior engineers and engineering specialists.
- Lead engineer for 120W, 5-output power supply with both 3-phase PMG and single-phase 115V, 400Hz inputs for a commercial jet engine control. Design used current-mode forward and boost converters, operating at 250kHz, single-phase active power factor correction and a hysteretically controlled bias supply.
- Lead designer for 30W, 3-output power supply with a 28VDC input for a military aircraft environmental control system. Design used 2 voltage-mode buck converters and a charge pump. Designed to MIL-STD-704.
- Designer of 50W and 130W multi-output power supplies for a commercial jet engine control. Design used 55VDC input, continuous mode flyback converters, operating at 150kHz.
- Designer of high frequency magnetics and experienced in circuit simulation and analysis techniques, including state-space averaging.
- Extensive production experience on these projects and other military engine control power supplies.

EDISON ENGINEERING PROGRAM, General Electric Company, Johnson City, NY. June 1985 to Feb. 1987.

- Engineering assignments in jet engine control software development; test equipment design for engine control computer; design of switched capacitor microcircuits; design, coding and debug of HP BASIC software for automated test of microcircuits; electrical evaluation of power hybrids.

OTHER ENGINEERING TEACHING EXPERIENCE

INSTRUCTOR. Fundamentals of Engineering (FE) review of electricity and magnetism for mechanical engineers at Raymond Corporation, Greene, NY. Part of a FE review course offered by SUNY Broome Community College, Binghamton, NY. Oct. 26, 2016.

INSTRUCTOR. Thomas J. Watson School of Engineering and Applied Science, Department of Electrical and Computer Engineering at the State University of New York at Binghamton, Binghamton, NY.

- Instructor for EECE 387, Design Lab. Delivered weekly, one-hour lecture, managed three weekly laboratories, held office hours, and advised about 110 3rd-year students. Jan. 2015 through May 2015.

ADJUNCT LECTURER. Thomas J. Watson School of Engineering and Applied Science, Department of Electrical and Computer Engineering at the State University of New York at Binghamton, Binghamton, NY.

- Instructor for EECE 382, Seminar II (Professional Aspects of Engineering). Delivered weekly, one-hour lecture, held office hours, and advised about 75 3rd-year students. Jan. through May 2006, 2007, 2008, and 2009.
- Instructor for EE 361, Control Systems. Delivered three weekly, one-hour lectures, held office hours, and advised 61 3rd-year students. Jan. through May 2004.

TEACHING ASSISTANT. Electrical and Computer Engineering Department, University of Vermont, Burlington, VT. Sept. 1984 through May 1985.

- Teaching assistant in EE 171 and EE172, Signals and Systems. Instructed a weekly one-hour problem session and held weekly office hours to assist students with assignments.

TECHNICAL EDITOR. Electrical and Computer Engineering Department, University of Vermont, Burlington, VT. May 1984 through Aug. 1984.

- Rewrote laboratory manuals and built equipment for EE 81 and 82, Sophomore Laboratories.

LABORATORY TEACHING ASSISTANT. Electrical and Computer Engineering Department, University of Vermont, Burlington, VT. Jan. 1984 through May 1984.

- Laboratory teaching assistant in EE 94, Bioengineering Applications of Physical Principles II. Instructed a weekly laboratory for physical therapy students.

OTHER ENGINEERING RELATED EXPERIENCE

SUBJECT MATTER EXPERT. Wrote Learning Objectives for the Connect with SmartBook for *Energy Systems Engineering: Evaluation and Implementation*, 3rd Edition, Vanek, F. M., Albright, L. D., and Angenent, L. T., McGraw-Hill Education, 2016.

SUBJECT MATTER EXPERT. Reviewed chapters in soon to be published *Energy: Supply and Demand*, David Rutledge (California Institute of Technology), Cambridge University Press, 2018.

CLEARANCE

Top Secret (past)

PATENTS

Zero Voltage Switching Power Supplies Connected in Parallel. Patent Number: 5,793,191. Aug. 11, 1998.

AC to DC Converter Having an Enhanced Power Factor. Patent Number: 5,181,159. Jan. 19, 1993.

PUBLICATION LIST

M. Elmore, S. Fellows, K. Gieskes, and L. Cummings, An Innovative Approach to First-Year Design Projects: Facilitating Learning Through a Project-Based Curriculum That Engages Students, presented at the 122th American Society for Engineering Education Annual Conference & Exposition, Seattle WA, June 14 – June 17, 2015.

M. Elmore and K. Gieskes, "Attendance in Large Engineering Classes and Its Effect on Student Performance", presented at the 120th American Society for Engineering Education Annual Conference & Exposition, Atlanta, GA, June 23 – June 26, 2013.

S. Zahorian, M. Elmore and K. Temkin, "Factors that Influence Engineering Freshman in Choosing Their Major", presented at the 120th American Society for Engineering Education Annual Conference & Exposition, Atlanta, GA, June 23 – June 26, 2013.

S. Zahorian, D. Summerville, S. Craver, and M. Elmore, "ACTS – An ABET Compliance Tracking System for Assessing Students", Computers in Education Journal, 3(2), pp. 49 – 58, April – June 2012.

S. Zahorian, D. Summerville, S. Craver, and M. Elmore, "ABET Compliance Tracking System (ACTS)", 118th American Society for Engineering Education Annual Conference & Exposition, Vancouver, B.C. Canada, June 27, 2011.

M. Elmore and K. Gieskes, "Work In Progress - Student Learning as a Function of Attendance in Large Engineering Classes", 41st Frontiers in Education (FIE) Conference, Rapid City, South Dakota, Oct. 12-15, 2011.

M. Elmore and J. Constable, "Work In Progress - Developing an Individualized Life-Long Learning Plan for Junior Electrical and Computer Engineering Majors", 41st Frontiers in Education (FIE) Conference, Rapid City, South Dakota, Oct. 12-15, 2011.

M. Elmore and V. Skormin, "μ-Based Controller Design for Switching Regulators with Input Filters", 6th International Association of Science and Technology for Development (IASTED) International Conference on Intelligent Systems and Control, Aug. 2004.

M. Elmore, C. Ellison, and V. Skormin, "Adaptive Model Following Control for Switching Regulators with Input Filters", 29th Annual Conference of the IEEE Industry Electronics Society (IECON), Nov. 2003.

M. Elmore and V. Skormin, "Adaptive Model Following Control of Switching Regulators", 38th Annual Meeting of the IEEE Industry Applications Society (IAS), Oct. 2003.

J. Mallack, M. Crawford, and M. Elmore, "Direct Modeling Methods for Air-Core Pulsed Alternators", 14th International IEEE Pulsed Power Conference (PPC), June 2003.

M. Elmore, F. Heimes, W. Ford, D. Thrall, A. Gattozzi, S. Pish, and J. Pappas, "Optimum Design of Snubber Circuits for Thyristor Assemblies Using an Improved PSPICE Thyristor Model and Computational Intelligence", 14th International IEEE Pulsed Power Conference (PPC), June 2003.

M. Elmore, V. Skormin, and V. Nikulin, "A PSPICE Optimum Design Tool Utilizing Genetic Optimization", 14th International Association of Science and Technology for Development (IASTED) International Conference on Modelling and Simulation, Feb. 2003.

M. Elmore, V. Nikulin, and V. Skormin, "Advanced Control of a Switching Buck Regulator", 8th European Conference on Power Electronics and Applications (EPE), Sept. 1999.

X. Zhou, M. Elmore, and F. C. Lee, "Comparison of High-Frequency Application of Silicon Rectifiers, GaAs Rectifier and ZVT Technology in a PFC Boost Converter", IEEE Power Electronics Specialists Conference (PESC), June 1997.

M. Elmore, "Input Current Ripple Cancellation in Synchronized, Parallel Connected Critically Continuous Boost Converters ", IEEE Applied Power Electronics Conference (APEC), Mar. 1996.

M. Elmore and S. Newton, "A High Power Factor AC-to-DC Converter for Distributed Power Systems ", High Frequency Power Conversion Conference (HFPC), May 1993.

M. S. Elmore, W. A. Peterson, and S. D. Newton, "A Power Factor Enhancement Circuit", IEEE Applied Power Electronics Conference (APEC), Mar. 1991.

RECENT PRESENTATIONS

M. Elmore, "Electrical Power Utilization Requirements for Electronics Equipment on Military Aircraft, 2012 Southern Tier Engineering Symposium and Professional Development Seminar, Binghamton, NY, Oct. 16, 2012.

M. Elmore, S. Fellows, K. Gieskes, and D. Santos, "Evolution of the Global Issues Conceptual Design Project: The Freshman Engineering Research Experience at Binghamton University", National Conference on Undergraduate Research (NCUR), Mar. 2011.

F. Heimes, M. Elmore, S. Ragon, D. Lindner, D. Boroyevich, and Z. Gürdal, "Optimum design of a thyristor assembly for pulsed power applications" Presentation to the 18th Electric Launcher Association Meeting, San Diego, CA, Oct. 9 – 11, 2001.

SPECIAL AWARDS

New Engineering Educators Travel Award, 118th American Society for Engineering Educators (ASEE) Annual Conference & Exposition, June 2011.

SRA Team Accomplishment Awards. Lockheed Martin, Dec. 2004, Dec. 2005, Aug. 2007, and Apr. 2008.

Outstanding Academic Achievement in Graduate Studies in Electrical Engineering. Binghamton University. May 14, 2005.

Best Presentation Award in session for "Adaptive Model Following Control of Switching Regulators", 38th Annual Meeting of the IEEE Industry Applications Society (IAS), Oct. 2003.

Award for Outstanding Achievement. Celestica Corporation. Oct. 1995.

Managerial and Outstanding Achievement Awards. General Electric Company. 1985, 1989, and 1990.

William A. Lachowsky Memorial Award. General Electric Company. May 1986.

PROFESSIONAL ORGANIZATIONS

Senior Member of Institute of Electrical and Electronics Engineers (IEEE).

Member of IEEE Power Electronics Society (PELS).

Member of American Society for Engineering Education (ASEE).

Member of Tau Beta Pi, Vermont Alpha Chapter.

SOFTWARE EXPERIENCE

Pspice, Simplis, MATLAB, Mathcad, Mathematica, LabVIEW, Solid Edge, Maxwell 3D, Arena, Visual Basic, HTML, PHP, MySQL.