

RESUME

Dr. Gary L. Johnson
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EDUCATION:

Kansas State University B.S. 9/57–8/61 Electrical Engineering
Kansas State University M.S. 2/62–5/63 Electrical Engineering
Oklahoma State University Ph.D. 3/64–7/66 Electrical Engineering
DATE OF BIRTH: November 20, 1938

TECHNICAL AREAS OF INTEREST:

Effects of Electric and Magnetic Fields
Electrical Fires
Wind Energy Systems
Power Transmission Lines

EMPLOYMENT EXPERIENCE

1994–present Professor Emeritus, Department of Electrical and Computer Engineering, Kansas State University
1984–1994 Professor, Department of Electrical and Computer Engineering, Kansas State University
1973–1984 Associate Professor, Department of Electrical Engineering, Kansas State University
1966–1973 Assistant Professor, Department of Electrical Engineering, Kansas State University

HONORS AND AWARDS:

College of Engineering Hollis Award for Excellence in Undergraduate Education, 1987
Electric Power Professor Chair, Sponsored by Kansas Electric Utilities Research Program, 1986–88
Eta Kappa Nu Distinguished Faculty Award 1984
Halliburton Faculty Development Award 1984, 1985
Eta Kappa Nu
Phi Kappa Phi

PROFESSIONAL AFFILIATIONS:

American Wind Energy Association
Institute of Electrical and Electronics Engineers

CONSULTING EXPERIENCE:

Oxbow Power Services, Reno, NV (Mr. Vince Zodiaco) 1994-96, Mr. Pete Ferrell, Beaumont, KS, 1996-2006. Oxbow was considering becoming a wind farm developer, and hired me to identify a premium wind farm site in Kansas. I found such a site, a 10,000 acre ranch owned by Mr. Pete Ferrell, located south of Beaumont, Kansas and about 40 miles east of Wichita. I installed two 40 m tilt-up anemometer towers and also placed anemometers on an existing communications tower at 10, 40, and 60 m. I collected wind speed data, wrote computer programs to use the data in predicting energy production from commercial wind turbines, and interacted with Kansas utilities to encourage them to buy the electricity from the wind farm. Oxbow saw that it would be several years before a wind farm could be built and abandoned their dream of being a developer in 1996. I then offered to be an agent for Mr. Ferrell. I would continue to collect data, write reports, and represent Mr. Ferrell to prospective developers and utilities in return for a small fraction of his royalty payments, if and when wind turbines were installed. Eventually, 75 MW of wind turbines were installed on his ranch as a part of the Elk River Wind Farm, the second wind farm in Kansas. I received my first check from Mr. Ferrell in February, 2006.

RP-1395, "Heat Gains from Electrical and Control Equipment in Industrial Plants, Part 2" (Dr. Warren White). Follow-on project to RP-1104. I help assemble instrumentation to measure losses in electrical equipment at currents up to 3000 A and voltages up to 7200 V. 2006-2008.

Brasher Law Firm, L.C., St. Louis, MO (Cynthia A. Masterson). Arnold Griffith v. BNSF Railway Company. Personal injury involving a possible electrical malfunction of a rail switchyard switch. 2004-2006.

RP-1104, "Heat Gains from Electrical and Control Equipment in Industrial Plants" (Dr. Warren White) I helped assemble the current transformers, electronic wattmeters, and other instrumentation necessary to measure electrical losses in circuit breakers and other electrical and control equipment found in commercial and industrial buildings. 2000-2002.

McDonald, Tinker, Skaer, Quinn & Herrington, P.A., Wichita, KS (Mr. Al Herrington). Mike Hampton Construction, Inc. vs. David Duran and Joe Duran individually and d/b/a D & J Painting; The Glidden Company; and Wagner Tech Corporation d/b/a American Spray industries. House fire in Wichita, KS, involving a Glidden 500 airless paint sprayer. 1998-99.

McDonald, Tinker, Skaer, Quinn & Herrington, P.A., Salina, (Mr. Al Herrington and Mr. Dustin L. DeVaughn). State Farm v. Superior Electric. House fire in Salina, KS. 1996-98.

Mid-America Manufacturing Technology Center, Manhattan, KS (Mr. Charles Waterson). Evaluation of a new type of high-voltage neon sign cable. 1997.

Mid-America Manufacturing Technology Center, Manhattan, KS (Mr. Charles Waterson). Taught a three day short course on electric motors and drives in Coffeyville, KS. 1997.

Davis, Unrein, Hummer, McCallister & Buck, L. L. P., Topeka, KS (Mr. Mark Buck). Meers v. Livingston. House fire in Elwood, KS caused by faulty light fixture. 1997.

Safeco Insurance Company, St. Louis, MO (Mr. Tim Krueger). Electrical fire in driver's door in 1996 Chrysler Convertible Sebring JX1. 1997.

Safeco Insurance Company, Overland Park, KS (Mr. Tom Lewis). Fire in old threeplex apartment building in Kansas City, KS. 1997.

Continental Western Insurance Company, Des Moines, IA (Mr. Merle Wagner). Cause of electrical fire in a Blimpie's facility in Wichita, KS. 1997.

Clark, Mize & Linville, Chartered, Salina, KS (Ms. Ilene Gaekwad). Electrical problems in Freightliner tractor and trailer. 1997.

Johnson and Associates, Wichita Falls, TX (Mr. Gary Southard). Hinson v. Titan Tool, Inc. Explosion and burns caused by an electrical spark in a Titan paint sprayer. 1995-96.

Morris, Laing, Evans, Brock & Kennedy, Chartered, Wichita, KS (Ms. Susan Schrag). Large grass fire in southwest Kansas that was caused by sparks from colliding conductors on a distribution line. 1996.

Clark, Mize & Linville, Chartered, Salina, KS (Mr. Jay Lang). Richwine v. Weiche. House fire in Linn, KS presumed to have been started by roofers using a power saw. 1995.

Miller, Stratvert, Torgerson & Schlenker, P.A., Santa Fe, NM (Mr. Jeff Jones). Lopez v. Jemez Mountains Electric Cooperative and Anselmo Trujillo. Electrocuting of person trimming a tree under a distribution line. 1995.

Donald W. Vasos, Attorney at Law, Kansas City, Kansas, USAA v. Newman. Cause of an electrical fire in a residence in Manhattan, KS. 1993.

O'Connor and Associates, Omaha, NE (Mr. Robert E. O'Connor, Jr.) Robinson v. OPPD. Explosion in 12 kV vault, 1993.

Palmer and Lowry, Attorneys at Law, Topeka, KS (Mr. Kirk Lowry). Martin v. Clay Center. Workplace electrocution, possible violations of National Electrical Code and National Electrical Safety Code, 1993.

Employers Mutual Company (Mr. W. L. Hall, Suite 390, One South 450 Summit Ave., Oakbrook Terrace, IL 60181-3900). Cause of electrical fire at Hays (Kansas) Medical Center, 1992.

Travelers Insurance Company, Overland Park, KS (Mr. Tom Melgoza). Cause of electrical fire at Mark Twain Bank, Kansas City, 1991.

Atherton and Vander Velde, Attorneys at Law, Emporia, KS (Mr. Jay Vander Velde). Cerretti v. Flint Hills Rural Electric Cooperative Association. Boating electrocution, possible violations of National Electrical Safety Code.

McDonald, Tinker, Skaer, Quinn and Herrington, P. A., Wichita, KS. (Mr. John E. Angelo). Lamb v. Mr. Coffee. Cause of mobile home fire. 1990.

McDonald, Tinker, Skaer, Quinn and Herrington, P. A., Wichita, KS. (Mr. John E. Angelo). Parker v. Harvey and Son Electric. Oil well electrocution, possible violations of National Electrical Code. 1988-90.

McDonald, Tinker, Skaer, Quinn and Herrington, P. A., Wichita, KS. (Mr. Alvin D. Her-

rington). Dean Wulf and Donna Wulf v. Plains Insurance Company. Investigated a house fire to determine if the cause was electrical in nature. 1988.

Thomas Cox and Associates, Attorneys at Law, Kansas City, Missouri. (Ms. E. Ann Wright). Reece v. Butler. Failure of a Mehrkam wind turbine. 1986.

Stumbo, Stumbo, Hanson and Hendricks, Attorneys at Law, Topeka, Kansas. (Mr. Larry D. Hendricks). Electrical burns at a service entrance. 1987.

Haas Electric and Security, Wellsville, Kansas. (Mr. Merle Haas). Patent of a new electric motor design. 1987.

Fairbanks and Rigor, Attorneys at Law, Goodland, Kansas. (Mr. Jerry D. Fairbanks). Bowker v. SCM Corporation. House fire caused by a faulty toaster. 1986-87.

Western Insurance Companies, Great Bend, Kansas. (Ms. Janie Voth). Low voltage problem in a commercial building. 1985.

Dreiling, Bieker, and Kelley, Attorneys at Law, Hays, Kansas. (Mr. Tom Kelley). Dorzweiler v. Midwest Energy. Electrocutation from a boom truck which hit a high voltage line. 1984-85.

Employers Mutual Company, Wichita, Kansas. (Mr. Ken Jones). Fire in a diesel driven electrical generator in a municipal power plant (Belleville, KS). 1984.

Kahrs, Nelson, Fanning, Hite, and Kellogg, Attorneys at Law, Wichita, Kansas. (Mr. Marc Powell). Hilgers v. Bergman Oil Company. Electrocutation at a salt water disposal well. 1983-84.

Whalen, Fairbanks, and Rigor, Attorneys at Law, Goodland, Kansas. (Mr. Jerry D. Fairbanks). Shoemaker v. Stuart. Electrocutation by a high voltage power line. 1983.

Morrison, Frost, and Olsen, Attorneys at Law, Manhattan, Kansas. (Mr. Rodney C. Olsen). Hammes v. Hunninghake. Electrical fire in a compressor motor. 1981-82.

Whalen, McGinley, and Fairbanks, Attorneys at Law, Goodland, Kansas. (Mr. Jerry D. Fairbanks). Raile v. Great Plains Electric. Lightning damage to an irrigation well. 1979-80.

John Bergland, Attorney at Law, Clay Center, Kansas. (Mr. John Bergland). Thomas v. C & W R.E.A. Electrical shock hazard in cattle waterers. 1978-79.

Dreiling, Bieker & Kelley, Attorneys-at-Law, Hays, Kansas. (Mr. Tom Kelley). Bruce Jensen v. Northwest Kansas Electric Cooperative Association. Electrocutation when a well drilling rig hit a power line. 1978-80.

Ward and Berscheidt, Attorneys at Law, Great Bend, Kansas. (Mr. Thomas Berscheidt). Warren Zook v. Central Kansas Electric Cooperative. Transmission line right of way valuation. 1976.

RESEARCH PROJECTS AND GRANTS:

“Twelve-Phase Electric Power Applications,” Advanced Manufacturing Institute, \$65,455, 1993–1994, (with N. G. Dillman and M. M. Morcos).

“Measurement of Harmonics on Kansas Utilities,” Kansas Electric Utilities Research Pro-

gram, \$60,318, 1985–1986.

“A Site Evaluation of Six Potential Wind Turbine Farms in Kansas,” Kansas Electric Utilities Research Program, \$161,404, 1982–1984.

Kansas Power and Light, \$78,000 to the Energy Systems Laboratory, of which about \$33,000 was for undergraduate equipment and \$45,000 was for a research computer, 1982–1983.

“Space Heating with a Wind-Powered Self-Excited Induction Generator,” USDA, \$76,500, 1981–1983.

Line item support for Energy Research, State of Kansas, The wind energy share of this averaged about \$45,000/year, 1978–1983.

“Hydrogen Fuel Project,” State of Kansas line item support, Co-investigator with F. W. Harris, \$41,000, 1974–1977.

Instructional Scientific Equipment Program for New Faraday Machines Laboratory, National Science Foundation, \$15,100 from NSF, \$15,100 matching from State for equipment, \$12,000 from State for remodeling the laboratory space, 1974–1976.

“Feasibility of Production, Storage, and Use of Wind Generated Hydrogen as a Farm Fuel,” National Science Foundation, Undergraduate Research Participation, Co-investigator with F. W. Harris, \$25,420, 1974–1975.

COURSE AND LABORATORY DEVELOPMENT:

Faraday Machines Laboratory. Ordered equipment, designed benches, wrote the lab manual for this fractional horsepower machines laboratory, which was in continuous operation as a required lab for mechanical engineering and an optional lab for electrical engineering from 1974 to sometime after my retirement in 1994.

Wind Engineering. Designed a course on this subject and wrote a textbook (*Wind Energy Systems*, Prentice-Hall, 1985). This was an elective senior design course open to all engineering seniors. Over 430 students took this course in the 15 times it was offered between 1976 and 1994.

Power Engineering Option: Provided leadership and encouragement to faculty and students in the electric power area. In the 1980s, for example, 15 to 20 percent of electrical engineering undergraduates at Kansas State University selected elective courses in electric power and sought careers in the electric industry, about four times the national average during that period.

PUBLICATIONS:

Book

G. L. Johnson, *Wind Energy Systems*, Prentice-Hall, 1985.

Journals

- G. L. Johnson, "Windfarm Layout as a Senior Electrical Engineering Student Design Project," *IEEE Transactions on Power Systems*, Vol. 8, No. 2, May 1993, pp. 753–758.
- J. Li, A. J. Heber and G. L. Johnson, "Variable-Speed Fan Performance with Single- and Three-Phase Motors," *Transactions of the ASAE*.
- G. L. Johnson, "Searchers for a New Energy Source: Tesla, Moray and Bearden," *IEEE Power Engineering Review*, January, 1992, pp. 20–23.
- J. Li, A. J. Heber and G. L. Johnson, "Electric Power Harmonics at Rural Substations and Farms," *Transactions of the ASAE*, Vol. 33, No. 6, November-December, 1990, pp. 2051–2057.
- G. L. Johnson, "Building the World's Largest Tesla Coil – History and Theory," *International Tesla Society Journal*, April/May/June 1990, pp. 24–31.
- G. L. Johnson, "A Fiber Optic System for Measuring High Voltages," *Extraordinary Science*, Vol. 1, No. 1, Jan/Feb/Mar 1989, pp. 5–9.
- A. N. Mortensen and G. L. Johnson, "A Power System Digital Harmonic Analyzer," *IEEE Transactions on Instrumentation and Measurement*, Vol. 37, No. 4, December 1988, pp. 537–540.
- G. L. Johnson, "Using Power MOSFETs to Drive Resonant Transformers," *Tesla 88*, Vol. 4, No. 6, November/December 1988, pp 7–13.
- G. L. Johnson, "Comment on Tesla's No-Wire Motor," *Tesla 87*, Vol. 3, No. 2, March/April 1987, pp. 25–27.
- D. H. Henry and G. L. Johnson, "Distributions of Daily Extreme Winds and Wind Turbine Operation," *IEEE Transactions on Energy Conversion*, Vol. EC-1, No. 2, June 1986, pp. 125–130.
- G. L. Johnson, "Hall Effect Measurement of Real and Reactive Power in a Faraday Machine Laboratory," *IEEE Transactions on Power Apparatus and Systems*, Vol. PAS-99, No. 3, May/June 1980, pp. 1032–1037.
- G. L. Johnson, "Economic Design of Wind Electric Systems," *IEEE Transactions on Power Apparatus and Systems*, Vol. PAS-97, No. 2, March/April 1978, pp. 554–562.
- G. L. Johnson and H. S. Walker, "Three-Phase Induction Motor Loads on a Variable Frequency Wind Electric Generator," *Wind Engineering*, Vol. 1, No. 4, 1977, pp. 268–276.
- G. L. Johnson and B. F. Walraven, "Tentative 'Cure' for Transmission Pole Fires," *Transmission and Distribution*, Vol. 25, No. 10, October 1973, pp. 80–90.
- R. D. Teichgraeber, F. W. Harris, and G. L. Johnson, "A New Stability Measure for Multi-machine Power Systems," *IEEE Transactions on Power Apparatus and Systems*, Vol. PAS-89, No. 2, February 1970.

Conference Papers

- G. L. Johnson, "Tesla Coil Impedance", The First Tesla Museum and Science Center International Conference on Nikola Tesla, October 6-8, 2006, Farmingville, New York.
- G. L. Johnson, "Tesla Coil Instrumentation," Proceedings of the 1992 International Tesla Society Symposium, Colorado Springs, CO, July 23-26, 1992, pp. 93-105.
- G. L. Johnson, "Electrically Induced Explosions in Water," 27th Intersociety Energy Conversion Engineering Conference (IECEC), San Diego, CA, Vol. 4, pp. 335-338, Aug. 3-7, 1992.
- G. L. Johnson, "Prospects for Wind Electric Generation," Energy and the Environment Conference, Kansas State University, Manhattan, KS, May 21-22, 1991.
- G. L. Johnson, "Building the World's Largest Tesla Coil-History and Theory," North American Power Symposium, Auburn, Alabama, October 15-16, 1990.
- G. L. Johnson, A. N. Mortensen, and A. J. Heber, "Measurement of Harmonics on Kansas Utilities," Missouri Valley Electric Association Engineering Conference, Kansas City, Missouri, April 11-13, 1989.
- G. L. Johnson, "Prospects for Windfarms in Kansas," 1988 European Community Wind Energy Conference and Exhibition, Herning, Denmark, June 6-10, 1988.
- G. L. Johnson, "A Site Evaluation of Six Potential Windfarms in Kansas," Great Plains Wind Energy Conference, Crookston, Minnesota, September 18-19, 1986. (Invited Paper).
- G. L. Johnson, "Getting Single-Phase Power from a Three-Phase Induction Generator," American Wind Energy Association National Conference, Pasadena, California, September 24-26, 1984.
- G. L. Johnson, "Kansas Wind Resource Assessment: Two Years of Data," Wind Workshop VI, Minneapolis, Minnesota, June 1-3, 1983.
- G. L. Johnson, "Getting Single-Phase Power from a Three-Phase Induction Generator," Wind Workshop VI, Minneapolis, Minnesota, June 1-3, 1983.
- G. L. Johnson, "Wind Powered Induction Generator," Solar and Biomass Workshop, Atlanta, Georgia, April 26-28, 1983.
- G. L. Johnson, "The Wind Powered Self-Excited Induction Generator," Solar and Biomass Workshop, Atlanta, Georgia, April 13-15, 1982.
- G. L. Johnson, "Kansas Wind Resource Assessment: Status Report," Wind/Solar Energy Conference, Kansas City, Missouri, April 5-7, 1982.
- G. L. Johnson, "Balloon Measurements of Boundary Layer Wind Speeds," Wind Energy Technology Conference, Kansas City, Missouri, March 16-17, 1981.
- G. L. Johnson and J. P. Wagner, "Agricultural Applications of Wind Resource Assessments," Workshop on Wind Characteristics and Wind Energy Siting, June 19-21, 1979, Portland, Oregon. (Invited Paper).
- G. L. Johnson, "Preliminary Results of a 5 kW Savonius Wind Turbine Test," Workshop on

Wind Power Applications in Agriculture, May 15-17, 1979, Ames, Iowa. (Invited Paper).

S. M. Babb and G. L. Johnson, "Wind Instrumentation with a Microprocessor," IEEE Industrial Electronic and Control Instrumentation Society Conference on Industrial and Control Applications of Microprocessors, March 19-21, 1979, Philadelphia, Pennsylvania.

M. S. P. Lucas and G. L. Johnson, "A Microprocessor Based, Low-Power, Data Acquisition System," IEEE Industrial Electronic and Control Instrumentation Society Conference on Industrial and Control Applications of Microprocessors, March 19-21, 1979, Philadelphia, Pennsylvania.

G. L. Johnson, "Ice Storage as a Method of Peak Shaving," Frontiers of Power Technology Conference, Stillwater, Oklahoma, October 9-10, 1978.

G. L. Johnson and S. J. Clark, "Irrigating with Wind Power," Paper MC-78-202, presented at the 1978 Mid-Central Region Meeting of the American Society of Agricultural Engineers, St. Joseph, Missouri, April 7-8, 1978.

G. L. Johnson, J. K. Shultis, J. P. Wagner, E. F. Glynn, and R. J. Buzenberg, "Farm Applications of Windpower," Paper MC-78-201, presented at the 1978 Mid-Central Region Meeting of the American Society of Agricultural Engineers, St. Joseph, MO, April 7-8, 1978.

G. L. Johnson, "A New Electrical Engineering Service Laboratory," Paper III A-3, presented at the 13th Annual Midwest Section Conference of ASEE, Manhattan, KS, March 22-24, 1978.

G. L. Johnson, "The Impact of Wind Electric Generators on Electric Utilities," Frontiers of Power Technology Conference, Stillwater, OK, October, 1977.

J. A. Buck, G. L. Johnson, and C. L. Hwang, "Simulation of Wind Powered Irrigation Systems in Kansas - A System Dynamics Approach," Summer Computer Simulation Conference, Chicago, IL, July, 1977.

F. W. Harris, G. L. Johnson, W. A. Harms, and W. E. Gooley, "An Economic Analysis of a Proposed Hydrogen Fuel System for Farm Applications," Frontiers of Power Technology Conference, Stillwater, OK, October 1-2, 1975.

G. L. Johnson, F. W. Harris, and N. R. Michal, "Farm Hydrogen System Load Factor Analysis Using Both Wind and Electric Utility Power in Southern Kansas," Second U. S. National Conference on Wind Engineering Research, Ft. Collins, CO, June 22-25, 1975.

G. L. Johnson and B. F. Walraven, "Investigation of Pole Fires and Construction Application to KCPL Co. 345 kV Stilwell-LaCygne Line," Missouri Valley Electric Association Meeting, April 12-14, 1972, Kansas City, MO.

G. L. Johnson, "Mutual Capacitance Between Ground Wires and Phase Conductors of EHV Transmission lines," IEEE Summer Power Meeting, San Francisco, July, 1972.

R. A. Mostafa, G. L. Johnson, and F. W. Harris, "Time-Optimal Control of a Power System with Displacement Governor," IEEE Winter Power Meeting, New York, January, 1970.