



Exponent[®]
Engineering & Scientific Consulting

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Professional Profile

Dr. Johnson specializes in electrically related issues particularly as they relate to the electrical environment of power systems. He has extensive experience with the electric and magnetic fields of transmission and distribution systems as well as the audible noise, radio noise, and ozone that may be produced by high voltage power systems.

Dr. Johnson's work has involved the measurement, modeling, and mitigation of the electrical environment of transmission lines, transformer vaults, and underground/submarine cables. His power system experience includes issues dealing with lightning, electrical transients, ground currents, and stray voltage.

Dr. Johnson has testified on the corona and field effects of DC and AC transmission lines and been a lecturer at the EPRI Transmission Line Design Seminars. He has given numerous presentations and led several workshops on power line design and the electrical environment. He was a principal investigator in the EPRI research on magnetic field sources and methods of shielding.

Dr. Johnson has performed engineering studies related to power system fields, audible noise, radio noise, induced currents, and ground currents for clients including state and federal agencies, utilities, and site developers. Other areas of expertise include investigations of electrically-related fires in devices ranging from consumer appliances to industrial equipment, electrical injury, electrical faults, electronic component failure, code compliance, and facility wiring systems. Prior to joining Exponent, Dr. Johnson was the President of Power Research Engineering, where he worked on engineering issues related to the electrical environment and power quality.

Academic Credentials & Professional Honors

Ph.D., Electrical Engineering, University of Illinois, Urbana-Champaign, 1979

M.S., Physics, University of Illinois, Urbana-Champaign, 1976

B.S., Engineering Physics, University of Illinois, Urbana-Champaign, 1974

Tau Beta Pi

Phi Kappa Phi

Professional Affiliations

Institute of Electrical and Electronic Engineers

American Association for the Advancement of Science

American Physical Society

BioElectroMagnetics Society

Publications

Johnson GB, Cotts B, Bishop J. Electric Environment of New Overhead HVDC Transmission Lines in North America. EPRI High Voltage Direct Current & Flexible Alternating Current Transmission Systems Conference, Palo Alto, CA, August 10-11, 2017.

Bishop J, Johnson G, Nilsson S, McNichol J. Performance of DC transmission line insulator strings. CIGRE Colloquium on HVDC and Power Electronic Systems Including Overhead Line and Insulated Cable Applications, San Francisco, CA, March 7-9, 2012.

Johnson G. Electrical environment: Conversion of an AC to a DC transmission line. CIGRE Colloquium on HVDC and Power Electronic Systems Including Overhead Line and Insulated Cable Applications, San Francisco, CA, March 7-9, 2012.

Bailey WH, Johnson GB, Bishop J, Hetrick T, Su S. Measurements of charged aerosols near ± 500 kV DC transmission lines and in other environments. IEEE Transactions on Power Delivery 2012; 27:371-379.

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Johnson GB, Bracken TD, Bailey W. Charging and Transport of Aerosols near AC Transmission Lines: A Literature Review, EPRI, Palo Alto, CA, and National Grid Transco Plc., London, England: 2003. EPRI Report 1008148, Palo Alto, CA, December 2003.

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Kavet R, Ulrich RM, Kaune WT, Johnson GB, Powers T. Determinants of power-frequency magnetic fields in residences located away from overhead power lines. Bioelectromagnetics 1999; 20(5):306-318.

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Johnson GB. Field-management technologies. Proceedings, EMF Engineering Review Symposium, EMF-RAPID Program, Charleston, SC, April 1998.

Johnson GB, Kavet R, Sastre A. Residential magnetic field transients. Effect of residential services on fields arising from distribution line capacitor bank switching. Bioelectromagnetics Symposium, P-130A, Salt Lake City, UT, June 1995.

Johnson GB, Clairmont BA. Low field transmission lines: Design concepts. Proceedings, 1995 CIGRE Study Committee 36 Colloquium, Foz do Aquacu, Brazil, May 1995.

Clairmont BA, Johnson GB, Zelingher S. Study on the human perception of hybrid fields. Proceedings, 1995 CIGRE Study Committee 36 Colloquium, Foz do Aquacu, Brazil, May 1995.

Johnson GB. HVDC transmission line corona performance and conductor contamination by insects. Proceedings, 1995 CIGRE Study Committee 36 Colloquium, Foz do Aquacu, Brazil, May 1995.

Johnson GB. Residential magnetic field sources. Proceedings, 1995 EPRI EMF Seminar, Santa Clara, CA, March 1995.

Johnson GB. Residential ground current reduction. Proceedings, 1995 EPRI EMF Seminar, Santa Clara, CA, March 1995.

Johnson GB. Residential field sources: EPRI EMF survey. Proceedings, Pennsylvania Electric Association Transmission and Distribution Meeting, Metamoras, PA, May 12, 1994.

Johnson GB, Lordan RJ. EPRI magnetic field technical information center. Proceedings, American Power Conference, Chicago, IL, April 26, 1994.

Johnson GB, Childs DJ, Sullivan TP. WAVECAM: A pocket size magnetic field waveform capture device. Proceedings, American Power Conference, Chicago, IL, April 26, 1994.

Johnson GB. Magnetic field sources in residences: Measurement, detection, and options. EMF Management Techniques Training Session, 1994 IEEE/PES Transmission and Distribution Conference and Exposition, Chicago, IL, April 14, 1994.

Johnson GB, Lordan R, Clairmont B, King K, Rashkes V. Magnetic field management for transmission lines. Proceedings, 1994 Missouri Valley Electric Association Engineering Conference, Kansas City, MO, March 23, 1994.

Johnson GB. Residential field sources at power frequencies. Proceedings, 1993 IEEE International Symposium on Electromagnetic Compatibility, pp. 132-137, Dallas, TX, August 1993.

Johnson GB, Dunlap JH, Zaffanella LE. Survey of residential magnetic field sources: Interim report. Proceedings, 1993 American Power Conference, pp. 1669-1673, Chicago, IL, April 1993.

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Johnson GB, Baishiki RS, Bracken TD, Rauch GB, Silva JM, Sussman SS, Zaffanella LE. Studies of power system magnetic fields: Characterization of sources in residential environments, measurements of exposure, influence on computer screens. Proceedings, CIGRE General Conference, Paris, August 1990.

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Johnson GB, Verdeyen JT, Kaye RJ. Extraction of an intense neutralized ion beam from a plasma. Proceedings, 2nd International Conference on Electron Beam Research and Technology, Ithaca, NY, October 1977.

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Workshops/Seminars

Johnson GB. Proposed IEEE standard - 1556: Public impacts. Panel Session: Electric and Magnetic Field Exposure Standards for the Public and Workers: 0 - 3 kHz, IEEE Power Engineering Society Summer Meeting, Vancouver, Canada, 2001.

Johnson GB. Power system magnetic fields. GPU Workshop, EPRI Power Delivery Center-Lenox, MA 1997.

Johnson GB. Measurement of residential magnetic fields. Yankee Conference, Massachusetts Environmental Health Association, Westborough, MA, 1995.

Johnson GB. Residential sources and exposure. EMF Health Research: State of the Science, Harvard School of Public Health, Boston, MA, 1995.

Johnson GB. Power system magnetic field management seminar. HVTRC, Lenox, MA, 1994.

Johnson GB. EMF in substations. IEEE Workshop, Los Angeles, CA, May 1994.

Johnson GB. Proceedings, Substation Magnetic Field Workshop. EPRI Workshop, Palo Alto, CA, EPRI Report on RP 2942-41, TR 101852, April 1993.

Johnson GB. Distribution magnetic field management workshop. HVTRC, Lenox, MA, 1992; Washington DC, 1993.

Johnson GB. End use magnetic field R&D workshop. EPRI Workshop, Raleigh, NC, 1992.

Johnson GB, Frazier M, Dunlap J. EPRI Electrical Potpourri Seminar, Palo Alto, CA, 1990; Haslet, TX, 1991.

Johnson GB. Magnetic field considerations: Low voltage grounding. EPRI Workshop, Colorado Springs, CO, 1991.

Johnson GB. Power system magnetic field measurement workshop. HVTRC, Lenox, MA, 1988 to 1995.

Johnson GB, Zaffanella L, Comber M, Nigbor R, Clairmont B, Anzivino L, Slocik J. EPRI High Voltage Transmission Line Design Seminar, HVTRC, Lenox, MA, 1982 to 1992.