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Experience:

Oct 2001 - Present **McQuin Electrical Power Consulting, Inc., North Versailles, PA 15137**
Nov 1996 - Sept 2001 **Electrical Power Consultant, North Versailles, PA 15137**

Site inspection/test	GE 11 - 525 MVA generators, Westinghouse 8.5 - 865 MVA generators, and various Allis-Chalmers, ABB, Brush and Mitsubishi units
Design studies, US Navy	Electro-magnetic aircraft launcher and arresting systems HTSC motor propulsion drive equipment
Review panel, US Army	Hybrid electric combat vehicles Pulsed power armament applications
Design studies	Hybrid electric commercial vehicles High-speed electrical racing cars Land-speed-record electric car - Class E-III
Design audit	Vehicle electrical eddy-current braking systems
Design studies	LV DC making and disconnect switches LV/MV AC circuit breaker conversions Generator terminal box enclosures LV/MV/HV electrical test facilities
Independent test inspector	High voltage and high power test laboratories
Product evaluation	Engineering justification files for third party listing and certification
Production surveillance	LV/MV AC/DC circuit breaker conversions HV AC circuit breakers
Installation audit/documentation for telecommunication station grounding systems	
Forensic failure analysis	Switch-gear Sub-station installations Generator equipment Traction and industrial motors

1990 - 1996 **PSM Technologies, Inc., East Pittsburgh, PA 15112**
 Electrical Engineer

Dec 1992 Appointed Vice President

Aug 1992 - 1996 Technical Director, Engineering and Development Division, and Test
Laboratory Manager, High Power Test Laboratory Division.

Activities: Responsible for the daily planning and operating of the High Power Laboratory, and the detailed coordination of the testing programs for power utility and related equipment. Also responsible for the technical direction of Engineering research and development projects, which cover power utility, MAGLEV and transportation, military and specialized electromagnetic machinery.

Jun 1991-Jul 1992 Test Laboratory Manager, High Power Test Laboratory

Activities: Responsible for the daily planning and operating of the High Power Laboratory, and the detailed coordination of the testing programs for power utility and related equipment. Testing is carried out in compliance with typically ANSI C37, C57, C62 and IEEE 4-1978, and other international standards and UL specifications. Regular test programs are carried out on transformers, reactors, vacuum and gas circuit breakers, air disconnect switches, distribution and line cut-out fuses, line and station class reclosers, surge arresters, bus-work and motor control equipment.

Jun 1990-May 1991 Chief Generator Engineer, R&D Division

Activities: Design leader for a team on a high frequency turbo-generator/energy storage system, and as project manager for the overall prime power and electrical pulsed power supply system design. This work comprises part of an overall project for the US Navy for an Electro-Magnetic Aircraft Launch System (EMALS).

1985 - 1990 **Brush Electrical Machines Ltd, Falcon Works, Loughborough, England**
 Senior Development Engineer, Rotating Machine Division

□ Provide technical support and analysis capability to design departments, the subject areas include: airflow, thermal, transient electrical performance, harmonic loading and supply implications, electro-static, electro-magnetic field and loss/force calculations. Carry out trouble-shooting/forensic investigations on equipment either on test or in the field.

Activities: 16MW induction generator for energy recovery schemes, various synchronous motors for DOL starting or VF applications, several salient-pole AC generators up to 30MVA for gas-turbine and diesel prime movers, turbine generators up to 150MW for packaged unit or combined cycle systems, and traction drives employing induction motors with a PWM inverter drives.

1984 - 1985 **Imperial College of Science and Technology, London SW7, England**
 Research Assistant Department of Electrical Engineering

□ To study the analysis and design of single-phase mains excited induction generators for wind-turbine or mini-hydro installations. Both single and double winding PSC induction machines were investigated, comparing their relative efficiency and pulsating torque generation. Two prototype machines designed, built and tested in support of the analytical study.

1980 - 1984

GEC Large Machines Ltd, Mill Road, Rugby, Warwickshire, England
Fundamental Development Engineer, Rotating Machinery Division

- Development of analysis programs for the design of electrical machines. Areas covered include airflow and thermal modeling, electrical design and loss evaluation and variable speed drives. Provide technical assistance to the individual design groups. Design of instrumentation schemes and special tests, in support of analytical work. Support in diagnoses of machine problems on both equipment on test and in the field.

Activities: Projects included machines of the following types:
Hydro-electric generators 80-330 MVA
Induction motors to 21 MW
Mining and surface marine and submarine propulsion dc motors
Synchronous generators to 30MVA
Synchronous motors for DOL or VF applications to 39000 hp
Pulsed power generators for JET, nuclear fusion reactor facility

Education: Department of Electrical Engineering, Imperial college of Science and Technology, London SW7, England

1974 - 1977

1st Class Honors Degree, Electrical Engineering.

Major subjects: Power Systems Analysis, Power Networks and Machines, Heat Transfer, Fields and Fundamentals of Electrical Machines, Electrical Machines Analysis, Linear Control Theory and Twentieth Century History.

Group Project: (Chairman) A study of the security of modern power stations.

Individual Project: The calculation of forces in induction devices by a single - port formulation

1977-1980 Joint research project with GEC Large Machines Ltd., on stator end region problems in large salient-pole synchronous machines.

Special Professional Assignments:

- Electromagnetic Laboratory, GEC Power Engineering Ltd, Stafford, England Jan-Feb. 1978.

Purpose: To perform a special electrical machine magnetic circuit investigation using the finite element method as the analysis technique.

- Computer Applications Group, Rutherford Laboratory, Chilton, Oxford, England. Jan. - Aug. 1981.

Purpose: To study the application of the finite element analysis programs PE2D and TOSCA to electrical machine type problems. To conduct this work it was necessary to derive and implement a tensor representation for saturable laminated magnetic configurations in 3D magneto-static fields.

- Rotating Electrical Machinery Association, London, England. Jan. - Apr. 1990

Purpose: To serve on a special working group to study and report on the use of electrical machines in hazardous environments, in particular offshore petro-chemical installations. The result of this work was reported in REM 505-1990, entitled “Report on an investigation by UK manufacturers of large electrical machines into problems of electrical motors of Type Exe and ExN operating in potentially explosive atmospheres”.

Professional appointments:

- Short-Circuit Testing Liaison-North America (STLNA). Member since June 1991; Chairman, Jan. 1994 - Dec. 2004; Technical Liaison Director, Jan. 2005 - Dec. 2006. This body forms a liaison between all the high-power test laboratories in North America, and is represented by the chairman at International coordination meetings. The goal of the organization is to promote uniform interpretation and implementation of national and international standards, and foster uniform reporting and certification of electrical equipment performance.
- IEEE-PES - C37 Switch-gear Committee, member of working groups on breakers, air switches, bus bar systems, and metal clad equipment since 1991, nominated to main committee in Oct. 1995.
- IEEE-PES - C57 Transformer Committee, member of working groups on transformer, reactors, harmonic loading guides and test code since 1991, nominated to main committee in Nov. 1995.
- IEEE-PES - C62 Surge Protection Device Committee, member of working groups on station, intermediate and distribution class arresters since 1991, nominated to main committee in July 1997.
- IEEE-PES - Electrical Machinery Committee, member of working groups on electrical testing and qualification of induction machines, synchronous machines, rail-traction, electrical insulation systems, since 1994.
- IEEE-PSIM - High Voltage Testing Techniques Sub-committee, member since August 1995.
- IEEE - Pittsburgh Section Executive Committee - Member since November 1996, Director (Membership Development), Aug. 1997 - Dec. 2003, sustaining member and contributor to technical programs to present.
- IEEE - Local Chapter IAS - Membership Development Chairman, Jan. 1996 - Dec. 2003.
- IEEE -IEC WG23 - Member of joint working group on the harmonization of testing requirements of high-voltage circuit breakers, Oct. 1996 - Sept. 2002.
- NETA -Member of the section panels (7.6.2.1-4 and 7.6.3.1-.2) for electrical testing acceptance specifications of medium and high-voltage circuit breakers, covering air/oil/vacuum/ SF₆ technologies, Nov. 1997 - Dec. 2003.
- USNC TAG for IEC-TC17A (MV/HV circuit breakers) - member, Aug. 1997 - Dec. 2006.
- USNC TAG for IEC -TC14 (Transformers) - member, Oct. 1997 - Dec. 2003.
- USNC TAG for IEC-TC37 (HV surge protection devices) - member, Oct. 1997 - Dec. 2003.
- USNC TAG for IEC-TC42 (HV testing techniques) - member, Aug. 1995 - Jun. 1998.

Publications:

- 'Design of single-phase induction generator for aero-turbine applications', McQuin and Williamson BICEM87, Beijing, China, Sept. 1987, pp. 867 - 872.
- 'Transient electrical and mechanical behavior of large induction generator installation', McQuin, Williams and Williamson, EMDA89, IEE London, England, Sept. 1989, pp. 251-255.
- 'The importance of mechanical drive train analysis for salient-pole synchronous motor drives', Williams, McQuin and Buckland, EMDA89, IEE London, England, Sept 1989, pp. 210 - 215.
- 'Testing of metal-clad switchgear', Electrical World, April 1995.
- 'Fault testing of gapless zinc oxide transmission line arresters under simulated field conditions', Melchoir, Williams and McQuin, IEEE T-PWRD, April 1995, pp. 786 - 796.
- 'How national testing laboratories use standards for the testing of electrical power apparatus', Hammons and McQuin, IEEE Power Engineering Review, July 1997.
- 'Test laboratory ratings on website', McQuin and Calwise, NEMA Electro-Industry, July 1999.
- 'Short-Circuit Testing Liaison celebrates 30 year history', McQuin and Calwise, NEMA Electro-Industry, December 1999.
- 'Short-Circuit testing group reviews IEC testing practices', Collins and McQuin, NEMA Electro-Industry, December 2001.
- 'Fuel economy and performance impact of hybrid drive systems in light truck, vans and SUVs', Polletta, Severinsky, Louckes, McQuin and Frederiksen, SAE 2002 World Congress, Detroit, Sept. 2002.
- 'Design, analysis and performance of an electric land-speed-record streamliner', Rizzoni, Sinsheimer, Ponziani, Gorse, McQuin, Davis and Miotti, IEEE VPP Conference, Chicago, Oct. 2005.
- 'Electrical Drive-train design for the current land-speed-record car', McQuin, Davis and Rizzoni, IEE PEMD2006, Dublin, Ireland, April 2006.

Memberships:

- Institute of Electrical and Electronics Engineers (US) Member (1988), Snr Member(1998 -)
- Institute of Electrical Engineers (UK) Student(1974), Associate(1977), Member(2002 -)
- CIGRE, Individual USNC Member (1992 -)
- Associate of the City and Guilds of London Institute (1977 -)
- The Old Centralian Association (1977 -)
- The Rugby Engineering Society (1983 - 85)

Honors:

- Lord Willis Jackson Memorial Scholar (1976-77)
- International Who's Who in Engineering (1984 -)
- IEEE PES Surge Protective Devices Committee, Prize Paper Award 1995
- IEEE PES Transformer Committee, Certificate of WG Appreciation Award, "IEEE Std. C57.110, IEEE

Recommended Practice for Establishing Transformer Capability when Supplying Non-sinusoidal Load Currents” 1999

- IEEE Third Millennium Medal 2000
- IEEE/PES/PSIM Subcommittee, Outstanding WG Recognition Award, HVTT 2003
- IEEE/PES/PSIM Subcommittee, WG Recognition Award for Outstanding Technical Report, “IEEE Std. #4, HVTT Past, Present & Future” 2003
- SCTA/BNI - Land Speed Record, Class Electric III - Battery, “Buckeye Bullet 1”, 321.8 mph, Bonneville Speedway, Utah, USA, sponsor and electric traction drive motor designer 10/14/2004
- IEEE PES Switchgear Committee, Outstanding WG Recognition Award, “IEEE Std. C37.60, Overhead, Pad-Mounted, Dry Vault and Submersible Automatic Circuit Reclosers & Fault Interrupters for Alternating Current Systems Up to 38 kV” 2005
- IEEE Pittsburgh Section, 2006 PES Outstanding Engineer Award, “In Recognition of his Contribution for Engineering on High Speed Electric Drives for Racing Cars” 2006
- SCTA/BNI - Land Speed Record, Class Electric III - Fuel Cell, “Ford Fusion 999”, 207.3 mph, Bonneville Speedway, Utah, USA, electric traction drive motor designer 08/15/2007
- IEEE PES Transformer Committee, Certificate of Appreciation Award, “Outstanding Contributions to Committee Education” 2008
- SCTA/BNI - Land Speed Record, Class Electric III - Fuel Cell, “Buckeye Bullet 2”, 302.9 mph, Bonneville Speedway, Utah, USA, sponsor and electric traction drive motor designer 09/25/2009
- FIA - World Land Speed Record, Class Electric III - Battery, “Buckeye Bullet 2.5”, 307.7 mph, Bonneville Speedway, Utah, USA, sponsor and electric traction drive motor designer 08/24/2010

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