



Chris Hawley

Electrical Safety Consultant

PhD, RPEQ

ACADEMIC & PROFESSIONAL QUALIFICATIONS

- PhD, Electrical Engineering, University of Wollongong, 2005
- Graduate Diploma of Management, Chifley Business College, 2012
- Bachelor of Engineering (Honours), University of Wollongong, 2001
- Hazardous Areas Design and Classification (Competent Person)
- WHS Lead Auditor training, SAI Global
- Earthing System Design
- OH&S White Card
- Senior First Aid, CPR and LV Rescue

ACCREDITATIONS

- Accredited Auditor Electrical Safety Management Systems, Qld Electrical Safety Office
- National Professional Engineers Registration
- Chartered Professional Engineer, Australia
- Registered Professional Engineer Queensland
- Hazardous Area Design & Classification - Competent Person

MEMBERSHIPS

- Chartered Professional Engineer (CPEng)
- Registered Professional Engineer Queensland (RPEQ)
- Registered Professional Engineer PNG
- Member of APESMA
- Member of IE Aust.

PROFESSIONAL EXPERTISE

- Engineer and project manager
- Electrical design and auditing
- Business development and leadership
- Specialties: Power systems, energy, substations/MCCs, processing plants, hazardous areas, materials handling, auditing of design and/or physical assets, instrumentation, earthing, technology development and innovative solutions

PROFESSIONAL CAREER

2013 – present	Electrical Safety Consultant, QRMC Risk Management Pty Ltd
2013 – present	Principal Consultant – EI&C, Engenuity Solutions Pty Ltd
2008 – 2013	Lead Electrical Engineer, Cardno BEC (Prev. BEC Engineering), Queensland
2006 – 2008	Lead Project Engineer, BASS Electrical Engineering (Prev. Wollongong Electrical Engineering)
2005 – 2006	Senior Engineer, Zenergy Power, PLC (Prev. SC Power Systems, Inc.)
2005 – 2006	Visiting Fellow Faculty of Engineering, University of Wollongong
2002 – 2005	Research Engineer Centre for Industrial Automation Research (CIAR) & Power Quality Centre (PQC), University of Wollongong
2000 – 2001	Electrical Engineer, Metal Manufactures, Port Kembla

PROFESSIONAL EXPERIENCE

Electrical Safety Consultant, QRMC Risk Management Pty Ltd

- Conducting electrical safety management system audits and electrical safety inspections for a range of client and industries

Principal Consultant - EI&C, Engenuity Solutions Pty Ltd

- Establishment and development of company safety and quality systems
- Technical oversight and direction of team of engineers from a range of disciplines
- Execution of studies and detail design engineering projects
- Installation support and commissioning
- Auditing and certification of electrical designs, installations and systems

Lead Electrical Engineer, Cardno BEC (Prev. BEC Engineering), Queensland

- Management and direction of projects/team:
 - Budget, schedule development and reporting.
 - Coordinating project teams.
 - Leadership and mentoring of electrical engineering team.
 - Setting work activities and monitoring progress.
 - Primary client interface and management of key accounts.
 - Business development, estimating and quoting for new opportunities.
 - Project management of approximately half of Brisbane office workload.
 - Technical oversight, review and sign-off of project deliverables.
 - Interviewing and selection of potential candidates for new staff, performance reviews for existing staff.
 - Input into strategic planning, safety plans and procedures.
- Detailed electrical design and specification of:
 - Drives and MCCs.
 - HV Switchgear/Protection.
 - Power Systems (inc. components such as Transformers, RMU, reclosers, power lines etc).
 - HV and LV Electrical Switchrooms, Substations.
 - Instrumentation and Control.
 - Earthing Systems

- Preparation and presentation of technical specifications, tender packages, installation SoWs and project schedules.
- Evaluation and administration of tender submissions and sub-contractor packages.
- Capital Estimation.
- Interfacing with instrumentation, process, mechanical, construction and automation engineers.
- Auditing existing designs and installations for compliance, condition and capacity.
- MV & HV power systems modelling using ETAP.
- LV power systems modeling using PowerCad.
- Arc flash studies.
- Producing hazardous areas classification reports and dossiers.
- Installation support and commissioning.
- Factory Acceptance Testing and Witnessing.

Major Projects/Achievements

- Newcrest Mining, Million Ounce Plant Upgrade, Lihir Island, PNG: Lead Electrical Engineer responsible for design of multiple process areas and high voltage network, as well as management of the various vendor contracts on Newcrest's US \$1.3 billion upgrade of the gold mine on Lihir Island, PNG. Including installation of a new 33kV network, the addition of 80MW of generation and load (approximately 500 drives).
- Department of Defence, Base Engineering Assessment Program, NSW, Vic, Tas: Technical Leader responsible for managing team across several states to audit and assess all LV and HV electrical assets at 8x defence bases. Includes modeling, site inspections and review of operations/maintenance documentation to baseline condition, capacity and compliance, then recommend, prioritise and cost remedial actions.
- Barrick Gold, Rubicon Underground Project, WA: Project Manager responsible for delivery of project and direction/approval of all design activities on Barrick's establishment of Rubicon and Hornet Underground gold mines in Kalgoorlie, WA.

Lead Project Engineer, BASS Electrical Engineering (Prev. Wollongong Electrical Engineering)

Previously, I was employed as a project electrical engineer by BASS and seconded to Bluescope Steel Ltd (BSL) as a lead project engineer. My responsibilities included:

- Electrical design and specification of:
 - LV and XLV process control circuits and control cubicles.
 - Process instrumentation systems based on P&ID and PURS documents.
 - Drives and MCCs for pumps, conveyors and other miscellaneous motors, including VSD, DOL and soft starter units.
- Design and layout of electrical services for switchrooms.
- Preparation and presentation of technical specifications, tender packages, installation SoWs, project/construction schedules and isolation procedures.
- Interfacing with instrumentation, process, mechanical, construction and automation engineers.
- Trained and inducted in a BSL's very extensive OH&S systems and procedures.
- Reviewing electrical design.

Major Projects/Achievements

- BSL, Port Kembla No.5 Blast Furnace Reline: Lead Project Engineer responsible for the Furnace Top and Stockhouse process areas on BSL's AU \$400 million refurbishment of the Port Kembla site No.5 Blast Furnace. This involves being responsible for all electrical design, overhaul and installation of equipment within the process area that interfaces with a wide range of material handling, pneumatic, hydraulic and electrical distribution systems.

As Senior Engineer, Zenergy Power, PLC (Prev. SC Power Systems, Inc.):

From January 2005 to July 2006 I was the senior engineer responsible for coordinating the engineering design team at Zenergy Power. My responsibilities included:

- Setup, management and coordination of international engineering design team including mechanical, electrical engineers and contractors (working on high power electric devices for integration into medium and high voltage systems).
- Established Australian technical design office as subsidiary of Zenergy.
- Preparation and execution of both technical and marketing presentations for customers and partners (international power utilities and transformer manufacturers).
- Preparation of project proposals, budgets and scopes of work.
- Shaping and executing product development roadmaps.
- Preparation and presentation of technical papers and reports.
- Conducting technical due diligence on potential partners and buyout opportunities for investors.
- Editing and justifying international patent applications.
- Preparing grant applications.
- MV & HV power systems calculation, analysis and modelling using PSCAD.

Major Projects/Achievements

- Successful Acquisition of Grant from US Department of Energy (DOE) to Install HV Prototype Fault Current Limiter: Technical representative on a team that marketed proposal to US utilities (Southern Californian Edison, CA and Consolidated Edison, NY), and once customer support had been gained, developed the proposal to be presented to the DOE. The DOE has recently awarded Zenergy Power and its affiliates US \$11 million to design and install the prototype HV device within the Californian electricity grid.

As Visiting Fellow Faculty of Engineering, University of Wollongong:

- From January 2005 to July 2006 I held a visiting fellowship with the Faculty of Engineering at the University of Wollongong to coordinate research activities with my employer, Zenergy Power.

As Research Engineer Centre for Industrial Automation Research (CIAR) & Power Quality Centre (PQC), University of Wollongong:

From February 2002 through to January 2005, was the research engineer responsible for projects involving power device development in the CIAR and PQC.

Major Projects/Achievements

- Design and Construction of a Custom Uninterruptible Power Supply: Lead Research Engineer on a team developing a device designed to mitigate voltage sags in the power supply to a continuous manufacturing process at Metal Manufactures, Port Kembla. The device was similar to a UPS system but using a superconducting coil as the high density energy storage medium (SMES). Specifically, developed all of the electrical and electronic systems, the control algorithms, completed all the coding and was responsible for the integration of all the system components.
- Design and Characterization of a Prototype Fault Current Limiter: Research Engineer on a team to design a saturable magnetic core type FCL, used to limit fault currents in power systems. The device was similar in construction to a dry type transformer and operates similar to an air-core reactor.