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Profile

An internationally experienced degree qualified and results orientated Senior Electrical Reliability Engineer, Plant Maintenance Engineer and Asset Management Specialist with experience gained at significant projects including Glenore's Murrin Murrin Nickel Mine in Western Australia. For the last six years in the role of sole plant Senior Electrical Engineer of a remote major hazard facility, chemical plant (H₂S, SO₂, H₂, N and gas) maintaining a 24/7 operation including self-generation, water treatment, hazardous areas and gas appliances.

Project experience spans all phases of projects from concept to implementation with emphasis on greenfield/brownfield plant construction designing for Reliability, Accessibility, Maintainability, Buildability, and Operability Review (RAMBO) and commissioning. Other roles have included Plant Maintenance Engineer, Reliability Strategic Implementation Engineering, and Technical Skills include; plant safety policy formulation and implementation; Total Productive Maintenance (TPM); project operational readiness implementation; RCM (Reliability Centred Maintenance), analysis facilitation, formulation and implementation as well as standard electrical skills delivering complex engineering support to both maintenance and production departments covering power systems, gas appliances, facilities, Testing and Commissioning of Electrical Switchboards, Circuit Breakers, Protection Relays, Cables and PLCs.

An appointed HV switching operator with MIEAust AEAI memberships complimented with a demonstrated history of working in the resources sector skilled in Power Generation and Distribution, Instrumentation, Project Engineering and Contract Management. Suitably qualified with Bachelor's degree, Electrical Engineering, Practical Electrical Engineer Diploma, Electrical and Electronics Engineering IEC Electrician Licence, 4 Years Military Experience (Engineer) and numerous certification and training, seeking a global role and has no restrictions whether residential or FIFO

Work History

Senior Electrical Engineer

Glencore – Minara Resources

Murrin Murrin

November 2015 – April 2019

The mine is operated by Minara Resources, wholly owned by Glencore, and uses high pressure acid leach technology to recover nickel and cobalt from laterite ore. Producing 41,990 t pa Nickel in metal from Open pit mines and 3,042 t p.a. of Cobalt

Significant change and cost saving projects

Arc Flash Study and Shock Hazard management Project	2018
Commissioning of Sizer Crusher MMD850 - Electrical Design, Installation	2018
Electrical design of Grey Mare 7 Bore Expansion for 33kv distribution lines and 415v supply	2018
GTG GE LM2500 Gas Turbine Operation Only and MV Motors Loading Capability Statement	2017
High and Premium Efficiency Motors - Starting and Transient Stability Strategy Reliability Project	2017
Electrical Design, Install and Commissioning of 5 x Mud Level Gauges `Smart Divers on `Thickeners	2017
Commissioning of advanced auto recloser controller, detecting long distant overhead powerlines faults	2017
Installation of `stingers` preventing power outage due to bird strike ensuring protection of wildlife	2017
31LR01Mill LRS Life Prediction Tool and Maintenance Turnaround Improvement	2016
LV & HV switchgear Circuit Breaker, Protection relay Testing for 2016 Major Shutdown	2016

Duties

- Delivering complex engineering support to both maintenance and production departments covering power systems, gas appliances and facilities.
- Ensure the integrity of designated Hazardous Areas and installed equipment, systems and drawings meet requirements of all country/international Standards.
- Management and implementation of engineering changes to various systems.
- Ability to read PLCs logics and make minor software changes
- Responsible as Subject Matter Expert (SME), providing first point of escalation for electrical instrument maintenance ensuring a high level of technical support across fault finding and repairs with all electrical equipment and gas appliances including PLCs logics and software changes.
- Champion Arc Flash management including implementation, delivering inductions, training packages ensuring a positive approach to safety awareness.
- Ensured adherence to all necessary compliance, regulatory and management policies and procedure relating to site change management to power and electrical systems.
- Maintain accurate, up-to-date, and functional documentation of all power systems and facilities.
- Developed, maintained and distributed drawings, manuals and procedures to a range of stakeholders.

- Provided technical advice around efficient maintenance initiatives on a wide range of critical assets.
- Monitored power quality of the power station, improving the load shedding scheme and managing blackout restoration.
- Created reports and presented regularly to SMT, ensuring all parties were aware of concerns or status of the plant
- Acted as Project Manager, supervising various projects from design to implementation including the selection and management of sub-contractors as required.
- Maintain compliance to regulations AS 3814, AS 5601, Safety of machinery AS4024/BS/EN/IEC 12100, Wiring Rules - AS3000/BS7671/IEC60364, Explosive atmospheres Classification of areas ASNZS/BS/EN/IEC 60079, Substation and high voltage installations AS2067/BS/EN/IEC 61936, Calculation of short circuit protection AS3851/BS/EN/IEC60909,
- Provide detailed engineering reports and project overviews to Engineering/Production meetings ensuring expert input.
- Liaise with OEM's on maintenance and asset management of onsite including generation and switchgear.
- Monitored asset management/service ensuring consistent and regular assessment of equipment life cycle.
- Responsible for defining electrical isolation plans are produced in alignment with Work Safe practices, including AC/DC and high voltage systems.
- Actively involved in the specification, review and procurement of electrical equipment designed for modification.
- Ensured maintenance strategies are developed and implemented, providing technical guidance to engineers and electricians in the maintenance of all Electrical components.
- Led Capital projects and modifications required across process plants including hands on preparation or examination of, drawings or specifications to determine work methods, sequence of activities.
- Ensure Maintenance programs are being undertaken and completed and led "Change Management" workshops and subsequent Change processes relating to E&I functions across the entire project.
- Ensured consistent focus and participation with Risk Assessments, HAZOPs and ICAM as applicable and required.
- Designed and implemented training/development plans for E&I Engineers and Technicians, mentor to graduate and young engineers maintaining relevant training and assessment in accordance with site policies and procedures.

Achievements

- Discovered significant issues resulting in Schneider concluding following root cause analysis of arc flash failures of numerous switchboard compartments that switchboard conductive parts had been incorrectly coated in method, alloy and thickness. Resulting in a Deed of Agreement and Schneider accepting responsibility for rectification works with costs in the region of circa \$5M.
- Rectified significant losses of \$3M by completing a detailed study on GT Load capabilities, burner configuration, staging valves, start sequences, and loading strategy. Following completion of study subsequently rolled out procedures, modified systems and equipment, resulting in future prevention of plant brown out as a single outage which was previously recorded as a \$3M production loss.
- Coordinated a reliability assessment and life expectancy analysis across Power Systems components and rotating machines. The audit yielded ~200 recommendations, identified alternate methods including visual inspections and reviewed oil sampling quality and analysis, realising significant savings on current costs of \$58M (cost/production loss)
- Reviewed Data analysis and reports for all power systems rotating machines in effort to postpone servicing and partial discharge testing saving \$30K/per annum.

Electrical Engineer

Minara Resources

Murrin Murrin

August 2012 - November 2015

Duties

- Responsible for ensuring the integrity of designated Hazardous Areas and installed equipment, systems and drawings meet requirements to all appropriate Australian Standards
- Created a structured report and service interval level for the power generation plant.
- Coordinated repairs, service and analysis of switchgear, turbines and generators. 1000kVA, 2000kVA & 5000kVA Transformers, LV Variable Speed Drives, Electrical Control Monitoring System (EMCS), Short circuit, Power/Load Flow and Load list analysis, 11/33/kV Switchgear package, Transmission and distribution Transformers.
- Supervised contractors, working to tight deadlines and commissioning installation projects.
- Organised the High and low Voltage protection testing and servicing of circuit breakers for major shutdown.
- Managed studies including Motor Starting and Transient Stability Studies and Protective Relay Coordination Study
- Ensured all engineering projects and activities adopted a 'zero harm' approach to people and environment.
- Led and/or contributed to all HAZOPs and design reviews for capital projects, particularly those required to tie new works into existing brown-field plant.
- Offered strategic and tactical engineering expertise and systems design for all aspects of HV power distribution, HV & MV motors and drives, 415V/11/33KV MCC & substations, protection equipment, earthing systems and power generation. Gas & Thermal, Power plant and refinery consists of 2 x 28MW steam turbines, 1 x 24MW gas turbine (HRSG), 3 x package boilers, 6 x 800 kW blackstart emergency and 2 x 1000 kW backup diesel generators.
- Lead Root Cause Analysis (RCA) investigations into equipment and system breakdowns, along with helping solve day-to-day process issues and adhoc plant breakdowns to root cause.

- Implement proactive engineering systems to prevent and predict plant failure, thereby improving asset utilisation, integrity and reliability of Hazardous Areas and installed equipment.

Achievements

- Active team member for the installation, commissioning and handover to maintenance operation of a new GE LM 2500 gas turbine.
- Responsible for the scoping and supervising statutory High and low Voltage protection testing and servicing of circuit breakers for the 2013 major shutdown. Throughout the 14 day shutdown ~150 components were tested including protection relays primary/secondary testing, current limiters, motor and generator protection relays. I identified opportunities to implement alternative power supply options, resulting in significant cost savings of \$250K in hired generators. Planned essential works during blackout and reviewed providing alternative solutions, consolidated with CSG, ensuring blackout was no longer required.
- Assessed risks associated with a 'do nothing' approach for 2016 Major Shutdown with a view to pushing out the majority of HV CB testing to 2019 resulting in savings of \$500K. Test results from the 2013 shutdown demonstrated, improved power systems reliability over time meaning fewer CB fault clearances and operations, less consequences upon CB failure due to process/contingencies in place, along with the fact we would be exceeding MSIA 1994 and AS2467:2010 recommended testing interval of 1 year, from 5 recommended to 6 actual, making it a viable prospect. Successfully proposed and accepted LV/HV CB testing every 2nd triennial shutdown saving \$500K.

Previous roles

Graduate Electrical Engineer
High Voltage Lab Intern
Integration Engineer
Board Design Engineer
Practical Engineer

Minara Resources
HIT
Harmonic Video Networks
Adimos
Ministry of Public Security

June 2011 - July 2012
December 2009 - November 2010
May 2005 - April 2009
February 2005 - May 2005
May 2000 - April 2004

Standards

Wiring Rules - AS3000/BS7671/IEC60364
 Safety of Machinery AS4024/BS/EN/IEC 12100
 AS2467 / BS6626 Maintenance of Electrical Switchgear
 Guide for Performing Arc-Flash Hazard IEEE 1584, NFPA 70E
 Substation and High Voltage Installations AS2067/BS/EN/IEC 61936.
 Explosive Atmospheres Classification of areas ASNZS/BS/EN/IEC 60079

Education

Bachelor's Degree, Electrical Engineering
 Practical Electrical Engineer Diploma, Electrical and Electronics Engineering

Membership

Member of Engineers Australia
 Member of Architects, Engineers Association

Training

BOSIET/FOET/HUET, CA-EBS
 LM2500+G4 Gas Turbine Operation
 WA Electrical Industry regulations
 EEHA IECEx Hazardous area installation & Inspection
 Arc Flash Hazard Safety Australia online Course 524747WA
 Preventing Unexpected Failures Training - Motors and Generators
 Testing and Commissioning of Electrical Switchboards, Circuit Breakers, Protection Relays, Cables and PLCs

Certification

IEC Electrician licence # 952640
 PTS174 HVSO - High Voltage Switching Operator
 Elevated Work Platform (EWP)
 Supervised Gas Fitter
 Practical Engineering
 Forklift Truck license (FL)
 Working at Heights
 Chartered/NER/RPEng/APEC – working towards

Reward and Recognition

GT Load capabilities study and load shedding strategy.

Schneider Okken Switchboards Root Cause Analysis of Arc Flash Failures - Rectification Under Warranty.

Technical Expertise

Rotating Equipment

Compressor
Blower Motors
SAG Mills
Overhaul
Gas turbines
LM 2500 GE
Brush lifting gear
Steam Turbines
Maintenance interval service
Pump Curve
System curve
Head pressure
Piston pump
Diaphragm pump.
Screw pump
Centrifugal pump
Cyclone, Agitator, Conveyor, Vibrator, Screener
Settler
Diesel emergency
Blackstart Generators
HV/MV/LV/ELV motors

Control Systems

SCADA
Allen Bradley
PLC Programmable Logic Controller
Micro / Control Logix
Yokogawa
Automation
GE Fanuc
HMI
Ethernet

Instrumentation

Thermocouples Pressure transmitters
Electronic shear pin Control valves
Flow controllers
Strain gauges
Weighing systems
Two wire and four wire control 4-20mA
Active and non- active zero's 4-20mA / 0-20mA
Current Transformer
Voltage Transformer

Plant Operation & Equipment

Fixed Plant equipment
Brownfield
Greenfield
Energy and gas facility
Furnaces
Vacuum Circuit breakers
Distribution Systems
Water treatment
Reverse Osmosis
High Pressure
H2S SO2 N H
Cathodic Protection installation and testing

Power Systems

High voltage
Medium Voltage
Low voltage
Overhead power lines
Auto Reclosers
AC DC motors, AC DC drives, AC/DC UPS packages
415V/11/33KV Switchgear MCC & Switchboards
Electrical Distribution Boards
1000kVA, 2000kVA & 5000kVA Transformers
LV Variable Speed Drives VSD
ABB Toshiba Fuji PDL Schneider Danfoss Alstom Drives
Liquid Resistance Starter
Transmission lines and distribution Transformers
Cable ladder/tray packages
Power Generation, Substation, Switchroom
Surge arrester
Vibration monitoring
Cable Schedules
Single Line Diagram SLD
Main HV, LV and AC/DC and DB lists & DB drawings
Protection SLD, EHV, HV, MV, LV
Termination details and drawings
REG 316, REF 542, SEPAM, Multilin, Beckwith
MFAC High Impedance Differential Relay
MMLG, MVAJ, SPAF, SPAJ
Underspeed relay
Fuse switches
Undervoltage relay
Power Analyser

Power Design Philosophy & Analysis

Electrical Design Basis
Electrical Operating and Electrical Black Start Philosophy
Electrical Priority Shutdown Schedule
Load list and Load demand analysis
Short circuit analysis
Power/Load Flow Analysis
Motor Starting and Transient Stability Studies
Protective relay Coordination Study
Power factor correction
Harmonics
Triplen Harmonics
Power Analyser, Power Quality
Zero sequence
Oil analysis
Partial Discharge
Tan Delta
Insulation resistance
Arc Flash Analysis
Visual exterior/interior inspections
Soak Test
Winding and tap changer resistance
Earthing systems

Secondary injection
Loop impedance
Relay self-test procedures
Stator insulation deterioration
Cooling system
Imbalance
Bearing

Reliability

Asset Management
Planned Preventative Maintenance
PM Optimization
Continuous Improvement
What, Why, How, When
Risk Assessment
Root Cause Analysis
Contingency
Obsolescence
6 Sigma
5 Why

Software & Database

SAP Oracle
Microstation
Microsoft Word
Tem curve
Matlab
ETAP
Labview
Microsoft Project
Microsoft Office
Microsoft Excel

Referees

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AutoCAD
ORCAD
Electrical Control Monitoring System (EMCS)

Plant Operation & Equipment

Fixed Plant equipment
Brownfield and Greenfield
Energy and Gas facility
Furnaces
Vacuum Circuit Breakers
Distribution Systems
Water Treatment including Reverse Osmosis
High Pressure
H₂S SO₂ N₂ H₂
Cathodic Protection installation and Testing
Holistic system operation.

Safety & Inspection

IECEX EEHA
Machinery Safety
Arc Flash Shock hazard
PGM Personnel Gas Monitor
Review Audit Hazardous Areas Electrical Equipment Register
Safety Control
Permits to Work (PTW) Permit Development
Isolations Checks
QA/QC inspections
FIC Field Inspection Check sheets
MDR
Lock Out and Isolation

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