



DIVERGENT ENGINEERING

CAPABILITY STATEMENT

DIVERGENT
ENGINEERING

Innovators in Power System Solutions

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🌐 WEBSITE

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POWER SYSTEM EXPERTS

COMPANY OVERVIEW

We are an engineering design, consulting and project resources company specialising in power system integration.

COMPANY MISSION

To provide reliable, high quality and innovative solutions that meet the needs of our clients in the energy, resources, and utilities industries through our full spectrum of electrical engineering services.

COMPANY VISION

To be the leader of electrical engineering system integration and design services within Australia.

✓ HOW WE WORK

We believe that understanding our clients' needs is key to our ability to respond to their needs effectively, and we are committed to delivering the best results possible.



INNOVATIVE
SOLUTIONS



RESPONSIVE
SERVICE &
SUPPORT

ABOUT

DIVERGENT ENGINEERING

Divergent Engineering is a Western Australian-based engineering design, consulting, and project resources company specialising in power system integration. We provide complete turn-key solutions for clients in the energy, resources and utilities sectors, from engineering design, and commissioning works, to site services and technical support. More recently, we expanded into providing renewable energy integration services.

Our team is led by four individuals with over 60 years of combined experience in the resources sector, with a focus on delivering customised engineering solutions.

Our goal is to be recognised as a premium electrical engineering system integration and design house within Australia by providing exceptional quality and innovative solutions. We owe it to our team of dynamic and enthusiastic people, who demonstrate our strengths and ensure complete client satisfaction.

Divergent Engineering is certified to the ISO 9001:2015 Quality Management System (QMS), ISO 45001:2018 Occupational Health & Safety (OHS) and ISO 14001:2015 Environmental Management System (EMS). Our team works closely aligned with the international standards to ensure consistent delivery of high-quality services and demonstrate our commitment to meeting the highest health and safety standards for our employees and clients in the workplace.

ISO Accreditation



OUR CORE VALUES



Safety

We ensure health and safety practices on-site and within the organisation is our priority.



Quality

We are equipped to handle challenges and complexities. Our engineering experience assures high-quality products and services.



Integrity

Our team acts with integrity and honesty and will adhere to ethical business conduct codes. We do what we say.



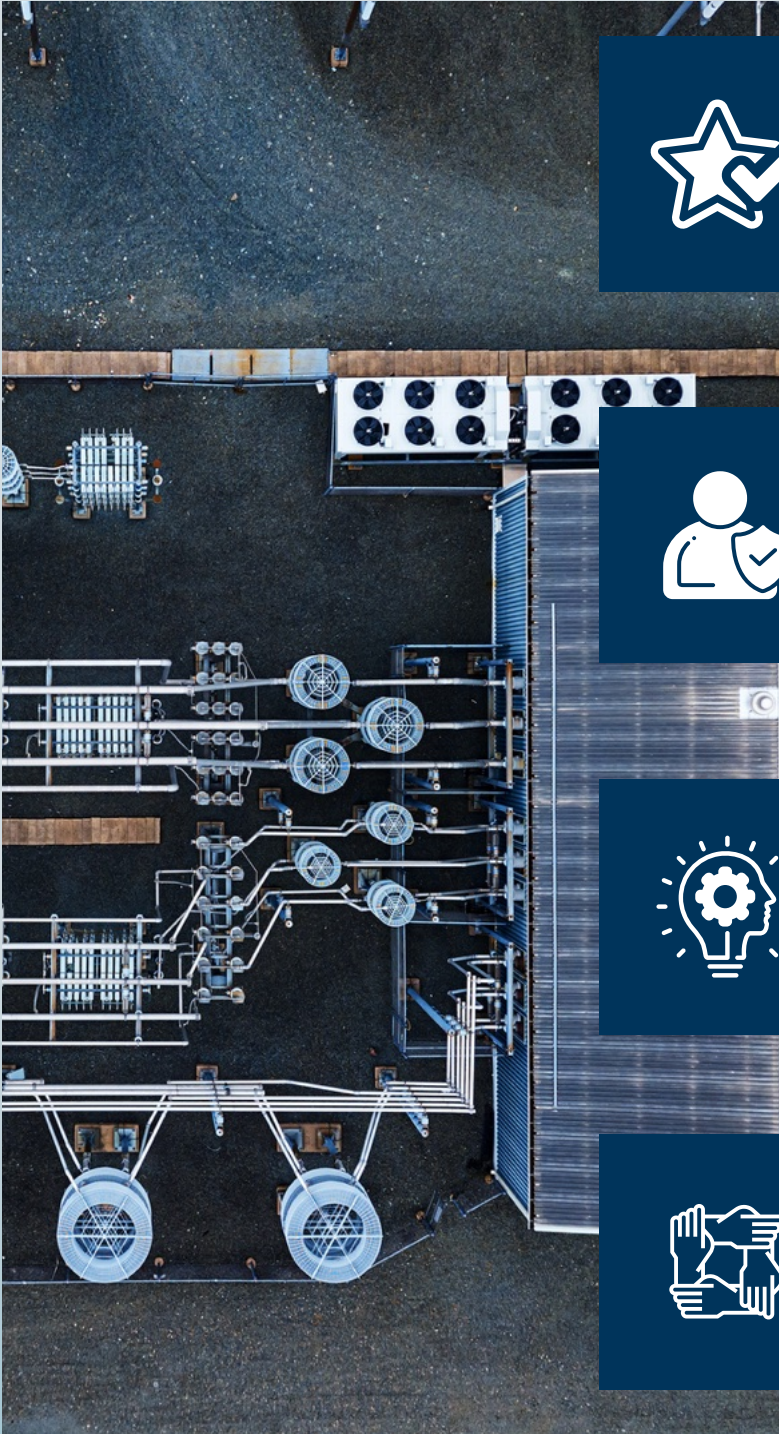
Innovation

We promote and support creative thinking, as well as outside-of-the-box solutions. Our business partners can rely on us to remain a step ahead with our innovative solutions.



Teamwork

Respectfully working closely with our colleagues, clients and suppliers to deliver the best outcomes for all.



Electrical Engineering Design

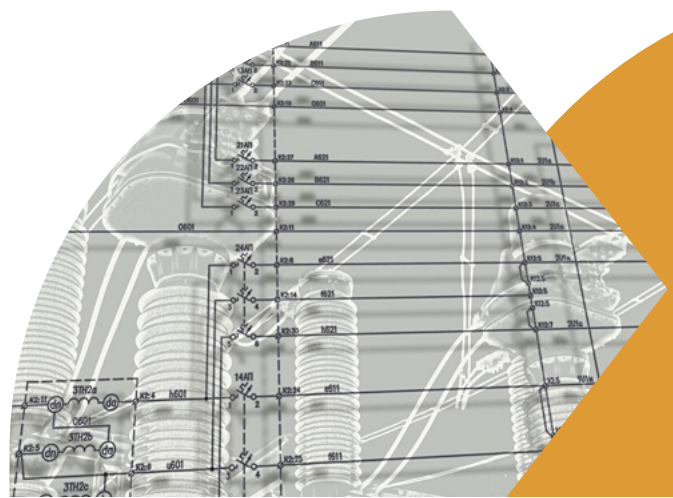
Solutions delivered to clients across the resources and utilities sectors include:

■ HV & LV Substation Design

- Network distribution design of switchgear, transformer and cable integration
- Overhead power line design
- Kiosk, substation and switchroom system design
- Lightning protection design
- Earthing systems
- Protection systems
- Arc flash mitigation
- Backup power and parallel systems
- Battery charging, auxiliary DC and UPS systems

■ Electrical Drafting and 3D Models

- Single-line diagrams
- Schematic, termination and layout/general arrangement
- Protection scheme diagrams
- Civil site plans and elevation for electrical assets
- 3D drawings of complete electrical assets



Power System Studies

We partner with you to develop and assess your power system models. Services provided include:

■ Data Acquisition and Analysis

- Data extraction
- Asset conditions analysis
- System improvement proposals
- Planned shutdown support

■ Power Flow Studies

We can optimise your power system efficiency in these areas:

- Determine an adequate supply of power to meet load demands and equipment specifications
- Align equipment ratings with maximum demands without overloading assets
- Maintain voltage safety and efficiency to prevent insulation damage
- Provide recommendations for a stable generation plan

■ Short-circuit Studies

- Initial symmetrical r.m.s short-circuit current
- Rated short-time withstand current
- Short-circuit making current
- Short-circuit breaking current

■ Protection Setting and Coordination

- Review and design suitable protection settings for new and existing systems
- Establish optimal settings for system protection
- Streamline protection for complex networks
- Provide recommendations for minimising disruptions

■ Arc Flash Hazard Analysis

- Electrical systems equipment analysis
- Incident energy levels calculations
- Arc flash hazard risk category calculations
- Identification of appropriate equipment specifications for new and existing systems
- Streamline protection schemes to eliminate catastrophic risks
- Provide recommendations for reducing hazards

■ Fault Investigation Analysis

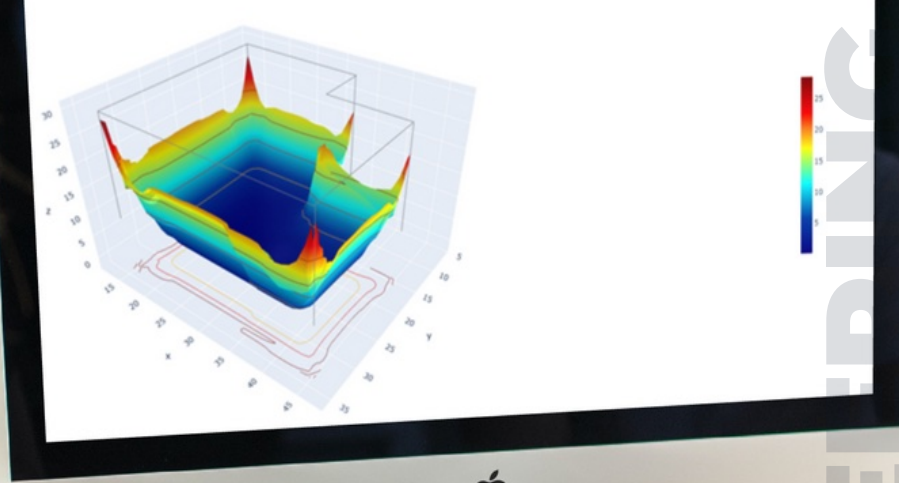
- Extraction of network data
- Fault sequence analysis
- Fault simulation and test generation
- Provide fault analysis report and recommendations

■ Network Planning

- Future electrical network planning
- Network reliability and compliance assessments
- Voltage stability studies (PV and QV)
- Equipment selection
- Detailed design, drafting and specifications
- Technical rules compliance evaluations
- Review of policy and standards
- Asset replacement strategy

■ Utility Network Connection Analysis

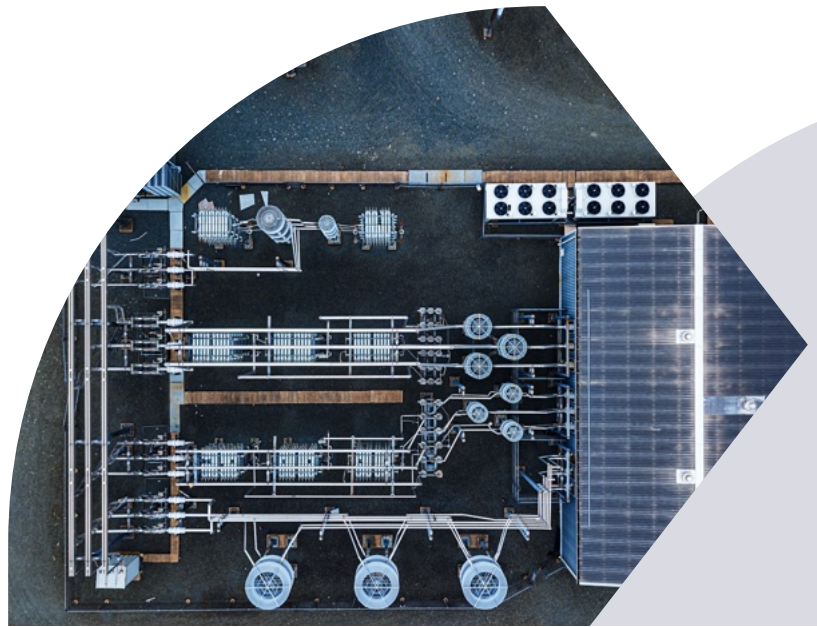
- Analyses, documentation and report submissions
- Policies and procedures review



Earthing Studies

Our earthing studies ensure compliance with the Australian Standards for:

- Design earthing general arrangements and earth continuity
- Earth grid modelling
- Earth grid design verification
- Potential earth rise
- Step and Touch transfer voltages analysis
- Step and Touch Potential analysis
- Safety compliance audits



Variable Speed Drive (VSD) Integration

We can provide professional advice and technical skills to ensure you get the best VSD to suit your needs.

Our team consists of experienced industry experts with extensive backgrounds in the following services:

- VSD design and installation
- Interface and programming
- Estimation of VSD power consumption
- VSD troubleshooting





On-site Services

From conception to execution, the same team is responsible for ensuring accountability. Our engineering services are complemented by site support services of the highest quality and level of safety.

In addition, we assist our clients with a well-developed test plan that ensures a reliable and safe system.

■ System Installation and Integration

- Kiosk, substation and switchroom installation
- Performance and safety testing against nameplates

■ Testing Services

- Circuit breaker testing
- Relay testing
- Function testing
- Transformer testing
- Cable testing





■ **Specialist Services:
SF6 Testing, Commissioning and
Maintenance**

We provide comprehensive SF6 testing, commissioning and maintenance services. Our engineers are experts in leak detection and investigation and can provide monitoring, maintenance and repair solutions. Our services include:

- Gas leak location detection
- Vacuum dehydration of new equipment to be charged with SF6
- Gas tightness verification prior to SF6 charging
- Gas recovery prior to disposal
- SF6 switchgear additions
- SF6 instrument testing replacement and repairs



Project Resourcing

We view project resourcing as a strategic function required for successful project completion and to maximise your business success. We are project managers as much as we are electrical engineers.

■ Feasibility Studies

We provide complete documentation to ensure transparency, for new installations and upgrades on existing electrical systems and assets:

- Conceptual studies
- Scope identification
- Cost analysis and optimisation
- Risk management evaluation
- Technology evaluation and recommendations
- Options analysis
- Regulatory compliance

■ Detailed Engineering Studies

Services provided include:

- Cost estimation
 - Material bill of quantities
 - Labour and plant quantities based on task breakdown
 - Engineering and project overheads
- Tender management
 - Equipment procurement and lead times
 - Tender documentation preparation
 - Formulating evaluation criterion
 - Technical risk evaluation
 - Defined project schedule
 - Operational readiness i.e. work management, drawings, operator manual etc.

Buildings, civil and structural design

We are capable of delivering buildings, civil and structural design services as an integrated offering to supplement our engineering services.

■ Power lines

With a range of modelling techniques and experience in standards, our team can help you with:

- Design of pole and tower foundations
- Assist with pole and tower infrastructure, with specific requirements for extra-high voltage and fibre optic communication networks
- Project execution, from concept to commissioning

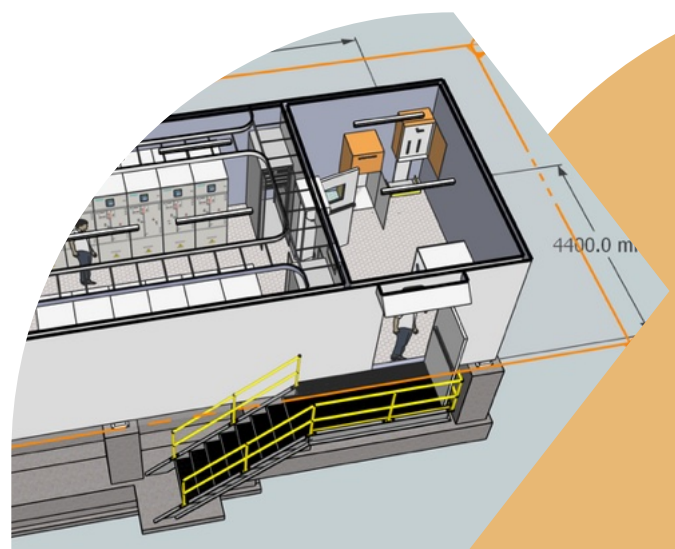
■ Radio base stations

Design service provided includes:

- Communication towers
- Communication buildings
- Off-grid power supplies

■ Substation and kiosk

- Smart cable path system with top and/or bottom cable entry
- Extensible kiosk designs with optimal layout
- Kiosk foundation with under kiosk pit access
- Plan design to minimise transportation costs



Renewable Energy Integration

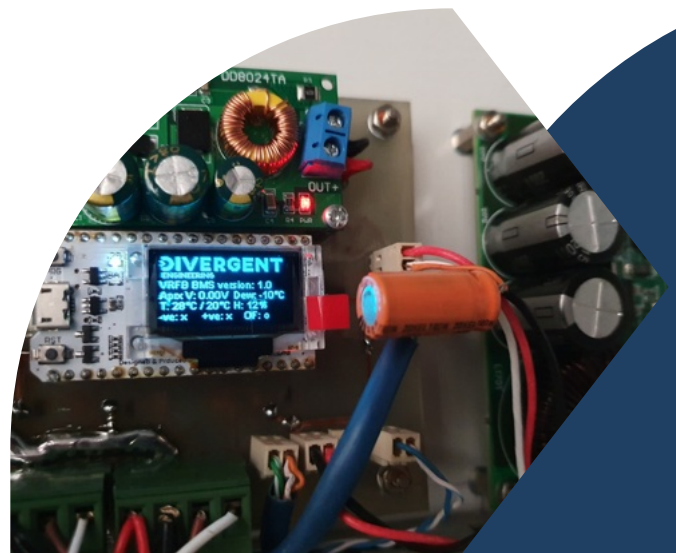
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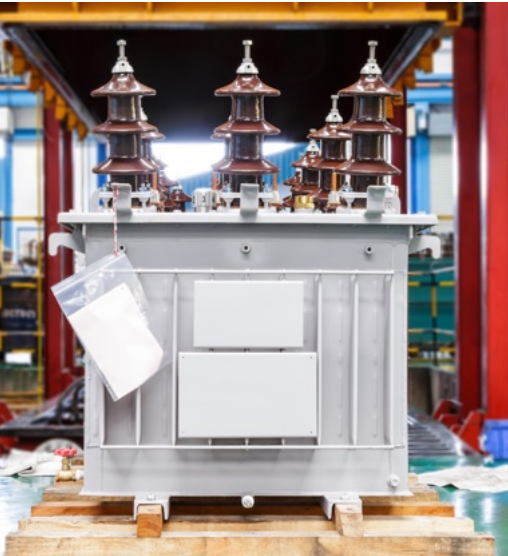
■ Solar and battery power system integration

- Battery Management System (BMS) design
- Battery condition analysis
- Battery performance optimisation
- Failure analysis
- Commissioning of stand-alone solar power system

■ Hybrid and off-grid power system integration

- Technical analysis of renewable resources and options
- Power quality and reliability assessments





Transformers

We distribute Distribution and Hermetically sealed oil-immersed transformers ranging from 100KVA to 15MVA. Different types of transformer installations include:

- Pad-mounted
- Pole-mounted
- Self banded kiosk arrangement



Kiosk Substations

We design and manufacture kiosk substations with our local partners to suit clients' specifications and requirements.

We can combine many improvements to the designs that we have worked on to meet your requirements.



Switchrooms

Our expertise lies in designing and constructing switchrooms tailored to clients' requirements. We design our switchrooms to account for factors such as fire protection, harsh environment, operating conditions and HVAC (heating, ventilation, air conditioning).



MCC's & Distribution Boards

Our Distribution & MCC Boards can be customised to meet any specification. We work closely with our local partners to offer you the most cost-effective solution for your needs.

KEY PROJECTS



132kV Switchyard Engineering Works

Working closely with the principal contractor, we completed detailed engineering works including circuit breaker SF6 gas leak investigation, diesel generator auto changeover wiring and commissioning, substation UPS BMS repair and re-commissioning.

Client

Talison Lithium

Location

Greenbushes, WA

Upgrading of Diesel Generator Control Systems

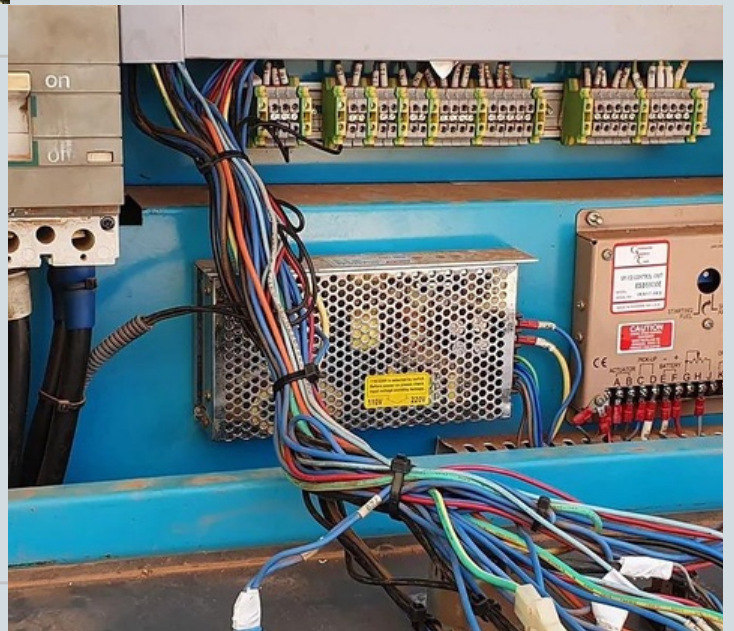
Supply of new generator controllers, including programming of control modules and commissioning testing.

Client

Cherrata Lodge

Location

Karratha, WA



Sensitive Earth Fault Relay Testing and Vibration Investigation

EF relay performance testing and vibration investigation on MC014 switchboard.

Client
Gold Fields

Location
Gruyere Mine Site, WA



Upgrading of Sample Station Cutter

Provided engineering design and PLC work for the integration of new sample cutter with existing instruments at the sample station.

Client
Fortescue Metals Group

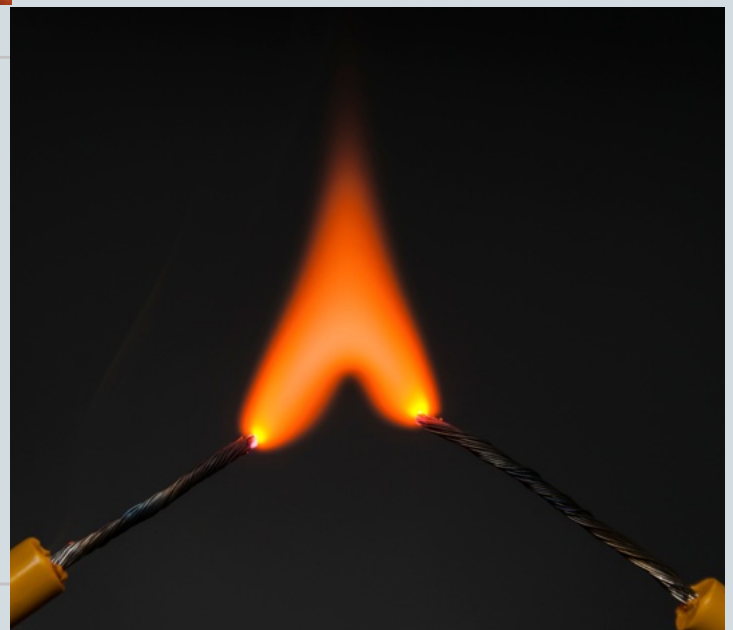
Location
Solomon Hub, WA

Arc Flash Studies on Switchboards

Arc flash analysis and switchboard labelling.

Client
Emtek

Location
West Perth



Custom Tailing Storage Facility Pump Control Panel

The project scope includes the planning, design, and delivery of a plug-and-play design of the pump control panel aimed to reduce cost.

Client
Gold Fields

Location
Bibra Lake and Gruyere Mine, WA



Development of Vanadium Redox Flow Battery (VRFB)

Engineering partner for the development of VRFB for a mining camp's bore pump system. The project scope includes custom design.

Client
SMEC and UPS (Ultra Power Systems)

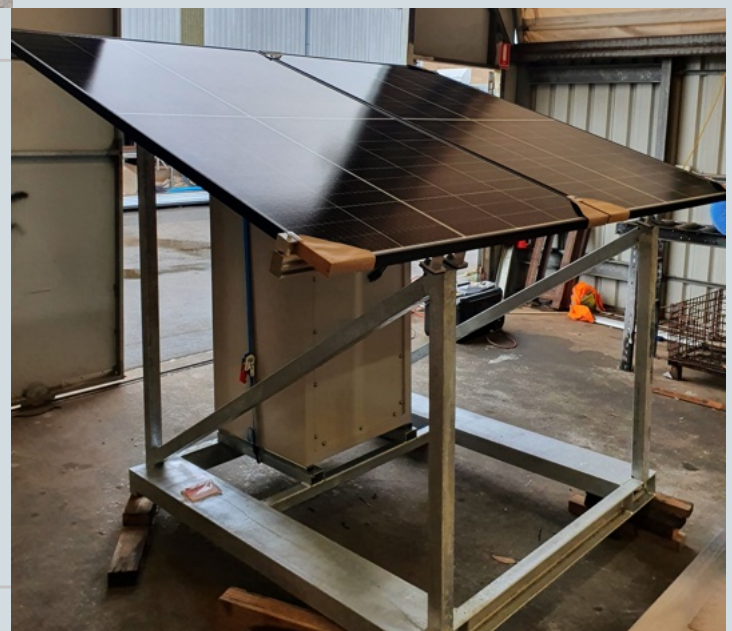
Location
Bibra Lake

Solar Skid for Tunnel Lighting

Designed and commissioned a custom-built system that provides power to sensor-activated LED lights within a conveyor tunnel.

Client
Chichester Metals

Location
Welshpool, WA



N03HWP High Wall Pump Project

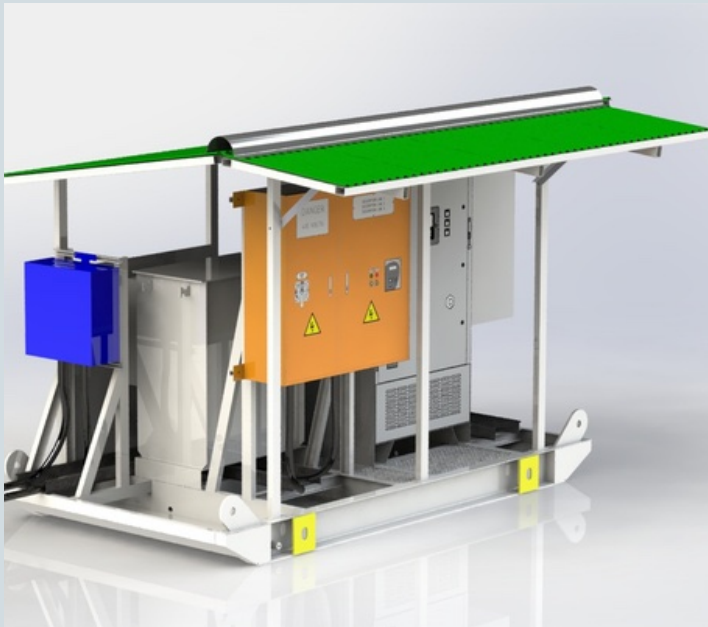
Provided engineering design for the required electrical system.

Client

Axis Services Group / Newmont

Location

Newmont Boddington Gold Mine



HV Engineering Study

Job scope includes customised electrical energisation sequence engineering design and detailed design for skid solution for a new plant in Papua New Guinea.

Client

Baker Hughes / Oil Search PNG

Location

West Perth

Liquid Resistance Starter (LRS) Engineering Services

Engineering services include testing and end-of-life cycle replacement project.

Client

Gold Fields

Location

Gruyere Mine, WA



Transmission Project

Job scope included ensuring drawings were in line with construction, development of walk down packages and site support.

Client

Ore Mining Operations

Location

Pilbara, WA



Overland Conveyor,

Provided high voltage power system studies, documentation and on site commissioning services.

Client

Roy Hill

Location

Roy Hill Mine Site, Pilbara, WA.

132kV Switchyard Asset Maintenance

Troubleshooting power supply units and circuits. Job scope included repairs, labeling and maintenance.

Client

Talison Lithium

Location

Greenbushes, WA



Vanadium BESS Design and Roll Out

Job scope includes design of Vanadium Flow BESS, electrical enclosures, BMS, structural & civil for supply to a vehicle fast charger system.

Client

Thorion Energy

Location

Mining Camp, WA



Jurien Bay Boat Harbour Power System Upgrade

Job scope included power system integration and development of IFC design drawings as well as providing engineering support throughout the construction phase.

Client

Williams Electrical Service

Location

Jurien Bay, WA

BHP TLO Relining System

Performed comprehensive electrical drawings review and compliance assurance.

Client

Bendtech Group

Location

Area C - Pilbara Region, WA



Norton Gold Binduli North Project

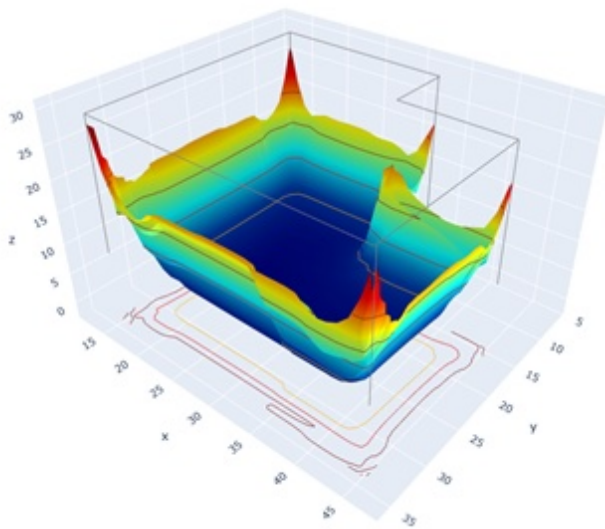
Job scope included commissioning and testing to facilitate first ore ahead of schedule.

Client

Norton Goldfields

Location

Binduli, WA



ROM 4 Power System Studies

Provided power system studies to investigate the performance of ROM 4 Overland Conveyor Substations.

Client

Roy Hill

Location

West Perth and Port Hedland, WA

Desalination Plant Services

Performed electrical engineering services for the improvement of desalination plant.

Client

Suez

Location

Perth, WA



11kv Capacitor Bank Replacement

Replacing the existing 11kV Capacitor Bank which has reach the end of life cycle and disposal.

Client
Suez

Location
Naval Base, WA.



132 kV Maintenance Strategy

Developing a maintenance strategy for 132kV Surge Arrestors.

Client
Talisson Lithium

Location
Greenbushes, WA.

For inquiries, contact us.



Contact Details

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