

Electricity Networks and Connections

Cardno BEC's global experience brings world class solutions to local challenges. We complete projects from planning through to implementation with a commitment to ongoing technical support.



Headquartered in Australia, we provide a wide range of services to the mining and utilities industries in Australia, Africa, Asia and Latin America. Our extensive, worldwide experience allows us to understand the challenges and develop a tool box of world-class solutions that have been tested in industrial environments. Through our regional offices and teams of highly trained staff we have the expertise to address local issues.

We have proven capabilities across all aspects of project management, power generation, power systems, control systems, automation, plant integrity and operations support.

'Applied expertise' is the difference – our clients are served by a team of dedicated people with the most appropriate and relevant experience.

Power Systems

All projects are dependent on power system reliability and safety.

Cardno BEC will carry out all grid connection services for new plant and facilities as well as network planning for utility infrastructure upgrades.

We make it our business to keep abreast of technological change and this is reflected in our system designs which routinely set industry standards and are always tailored to meet your individual needs.

Utility Connection Planning Design and Implementation

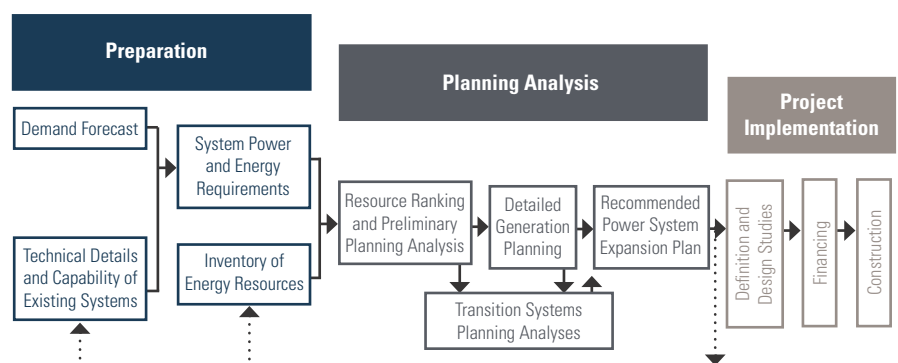
- > Utility and supply authority negotiations
- > Design of utility connection protection systems
- > Capital and operational costing comparison studies and feasibilities
- > Network stability and generation optimisation
- > Network SCADA management systems

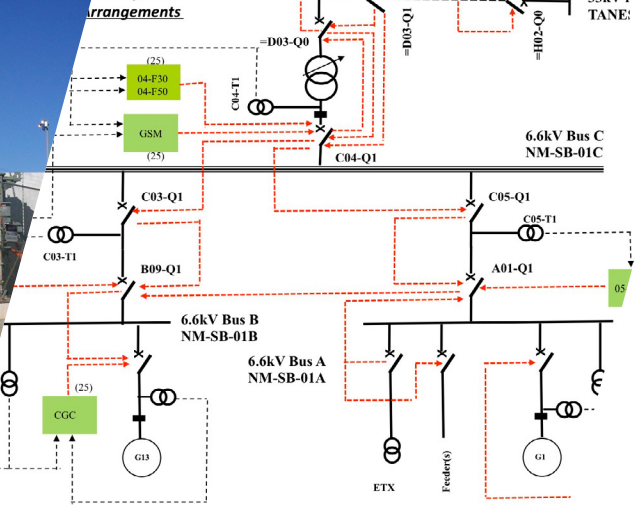
Complete Electrical Power System Design for Generation, Transmission and Distribution

- > Transmission and distribution system design
- > Substation design and construction
- > Protection system design

Energy Management

- > Determine current system structure and capacities
- > Assessment of power delivery system efficiencies and strategies for optimisation
- > Power factor correction
- > Investigation and design of automation systems for enhanced equipment management
- > Load flow studies and development of strategies for energy management





Safe systems,
employee recognition,
continuous improvement,
client satisfaction.

Power System Fault Analysis

- > Study and assessment of faults
- > Emergency response to critical failures
- > Harmonic distortion analysis
- > Electrical safety audits
- > Insurance and accident investigation
- > Earthing system audits and design
- > Fault rectification

Radio Link Planning

Cardno BEC can provide specialist VHF/UHF, microwave, VSAT and satellite link planning, design and implementation to various organisations including industry, government, utility, vendors and operators.

We have experience in using multiple industry software tools packages to produce detailed path profiles and link budgets including link availability and performance.

Our services can be used to design small to large backhaul networks, point to multipoint networks, single point to point links or satellite links. With our diverse experience across multiple industry sectors we are well equipped to provide the following services:

- > option studies;
- > feasibility studies;
- > business case development;
- > budget estimates and desktop studies;
- > technology reviews and equipment selection;
- > tender, installation, commissioning, implementation and acceptance documentation;
- > high level and detailed design documentation and drafting;
- > network management design;
- > line of sight assessments;
- > radio field surveys;
- > site selection, site surveys and site assessments; and
- > radio spectrum license applications.

Power Generation

Whether you need to increase power capacity, maximise efficiency or design a new power station, even in the most remote location, Cardno BEC has the expertise and the personnel to deliver a solution for you.

Cardno BEC has an enviable record on power station projects for mining companies and regional centres throughout Australia and overseas. We bring direct and relevant experience to bear on your requirements.

By contacting us early in the conceptual stage the benefits and cost savings can be significant. Let us carry out your feasibility study to identify the simplest, most effective solutions.

Power Station Audits

- > Performance assessment and equipment monitoring
- > Efficiency reviews with regard to fuel, load profiling and load management
- > Operating procedures and compliance with statutory requirements

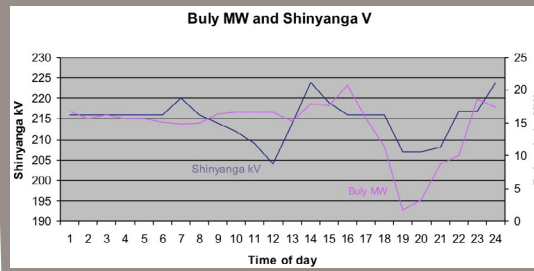
Generation Asset Planning

- > Reviewing and planning generation capacity
- > Power station design and project implementation
- > Determining capacity for generation expansion

Industry Groups

Our experience encompasses a complete range of industry sectors, including;

- > oil and gas;
- > mining;
- > utilities;
- > materials handling;
- > industrial; and
- > petrochemicals.



Cardno is an ASX200 professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage and deliver sustainable projects and community programs. Cardno is an international company, listed on the Australian Securities Exchange [ASX:CDD].



Cardno is committed to the highest standards of health, safety and environment across all of our business and locations.

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