

Leinster Nickel Operation PowerStore Project Western Australia 2006

CASE STUDY

BHP Billiton's Leinster Nickel Operation, 650km North East of Perth has been working together with Powercorp to establish the PowerStore parameters suitable for its operation at the mine.

The Leinster Nickel Operation is an underground mining operation, incorporating a large electrically driven winder to extract the ore from 1000m underground. This winder is the epitome of a cyclic load, demonstrating 8.5MW of demand shift over a period of 120 seconds, even though the average power consumption over time is just 2MW.

Since the installation of the 1MW PowerStore system in 2006 the total demand shift has been reduced from 8.5MW down to 6.5MW, allowing the independent power provider to reduce the amount of spinning reserve by 1MW.

Along with the reduction of spinning reserve, the PowerStore is providing high resolution data of the winders performance and local electrical grid events.

The PowerStore system at Leinster is connected to the HV winder substation, some distance from the winder itself. Advanced communication and control provided by the PowerStore Integration Package allows the PowerStore to operate in a fully automatic mode, providing power to the winder when it is most needed, independent of the variables in the process, such as loading or unloading delays.

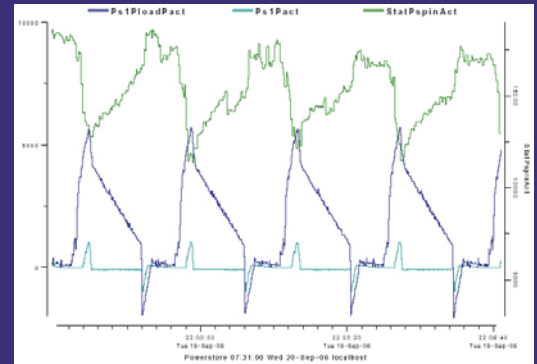
Project Information

title:	Leinster Nickel Operation PowerStore Project
region:	Western Australia Gold Fields
customer:	BHP Billiton
commissioned:	June, 2006
Power system type:	Mining - Peak Lopping
power system size:	Around 100MW





PowerStore graph from Leinster.



About Powercorp

Powercorp was formed in 1988 in Darwin, Australia, to automate the wide variety of diesel generator power stations in Northern Australia for the Power and Water Authority. This program encompassed some 60 communities and work has extended throughout Australia and internationally.

With the success of the automation program came the need to integrate renewable energy for fuel saving. This work and the demand side management capability of the control system led to advanced wind diesel systems in Western Australia for Western Power Corporation. With the winning of a Showcase grant from the Federal Government Powercorp pioneered high penetration wind diesel systems during the late 90's.

The chief problem facing wind diesel systems and indeed any renewable energy fuel saving technology when connected to isolated grids is the instability caused on the grid by power surging. Such surges and frequent loss of power can be caused by wind gusts and lulls or cloud cover in the case of solar systems. It is not possible for conventional generators to cope with these power instability issues and blackouts usually result. Even when the wind flow is low the fluctuations in wind speed can cause unacceptable generator response called "hunting" which uses more fuel and can cause engine damage.

The grid stability issue is seen in many small grids and at the end of long distribution lines. In the mining sector large electrical equipment such as winders and crushers can cause power fluctuations much the same as seen from renewable plant.

PowerStore the company's flywheel inverter system can absorb and deliver power very fast to dampen all instability to maintain the grid specifications to utility standards.

Powercorp combines advanced control with powerful inverter and flywheel technology to solve network instability problems. With these solutions now a commercial reality Powercorp stands as the most advanced group in the world for high penetration wind diesel and isolated grid stability solutions. Solutions encompass renewable generation, mines sites and industrial complexes. Anywhere where the electrical network is having difficulty maintaining acceptable voltage and frequency.

The company is largely research engineering based with a strong manufacturing capability. It stands ready to serve any customer with grid instability problems.



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