

A landscape photograph featuring a green field in the foreground, a utility pole with power lines stretching across the middle ground, and a blue sky with white clouds in the background. The text "engineering innovative power solutions for a better world." is overlaid on the image.

engineering innovative **power** solutions for a better world.

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Powercorp Pty. Ltd. / Powercorp Alaska

Company Technology Report

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AGENDA

1. Company Introduction
2. Products Overview
3. Australia Projects
4. Alaska Projects

Company Introduction

- **Powercorp Pty. Ltd. – 1988**

Darwin, NT AUS

Darwin



- **Powercorp Alaska – 2003**

Anchorage, AK USA



The Powercorp Group is a world leader in power generation automation and control, the stabilization of weak power networks and isolated renewable/diesel hybrid power stations.

Products developed by Powercorp fall into four classes:

- 1. Automation and Control**
- 2. Wind/Solar/Hydro Power Station High Penetration Technology**
- 3. Power Quality and Grid (network) Stabilizing Technology**
- 4. Technical Modeling / Reporting**

1. Automation & Control

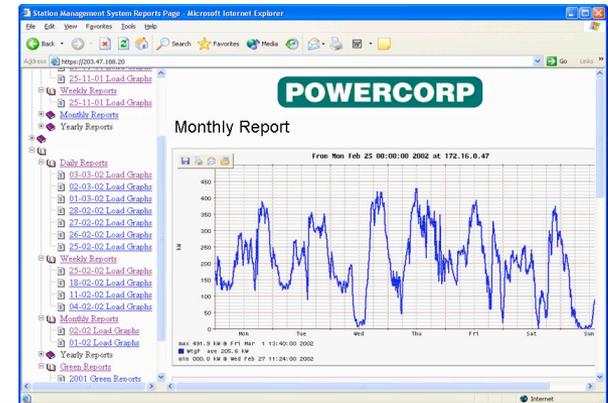
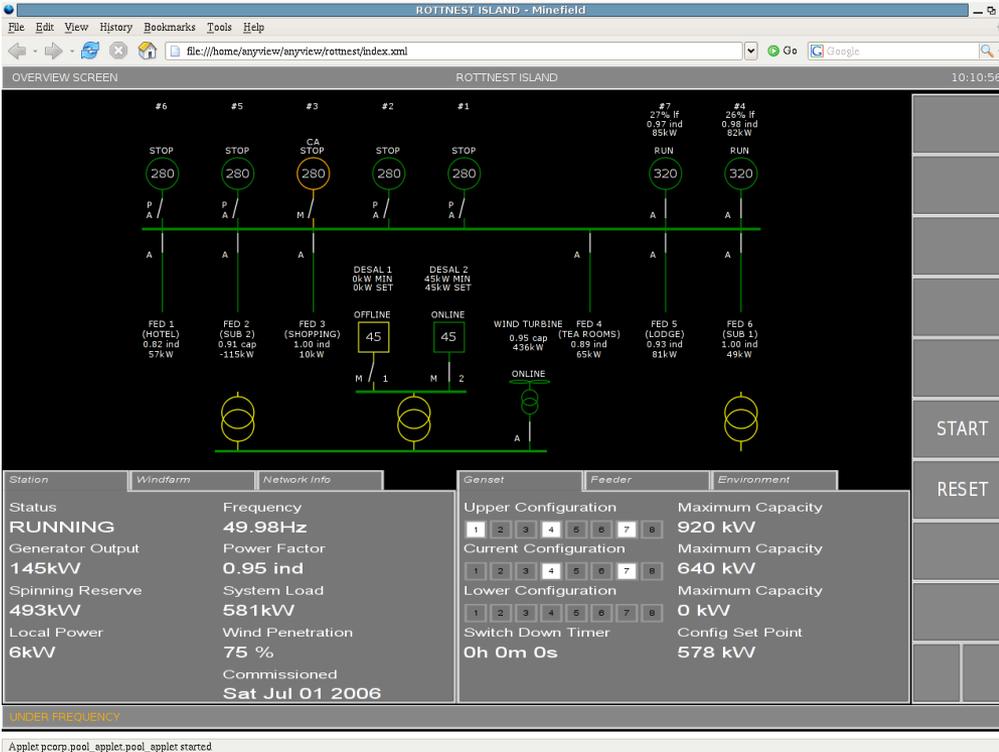


PowerCommand System "Commander" (IPS)

8 gen sets / 6 feeders



Husky Microlink 3 gen sets / 2 feeders



AnyView Screen Shots and Sample Web Based Report

Summary of Automation

50+ Commander (IPS) Multiple Diesel Systems



2. Wind/Solar/Hydro Power Station High Penetration Technology



Dynamic Grid Interface (DGI)



Low Load Diesel (LLD)



Flywheel Grid Interface



Powerbridge Rail

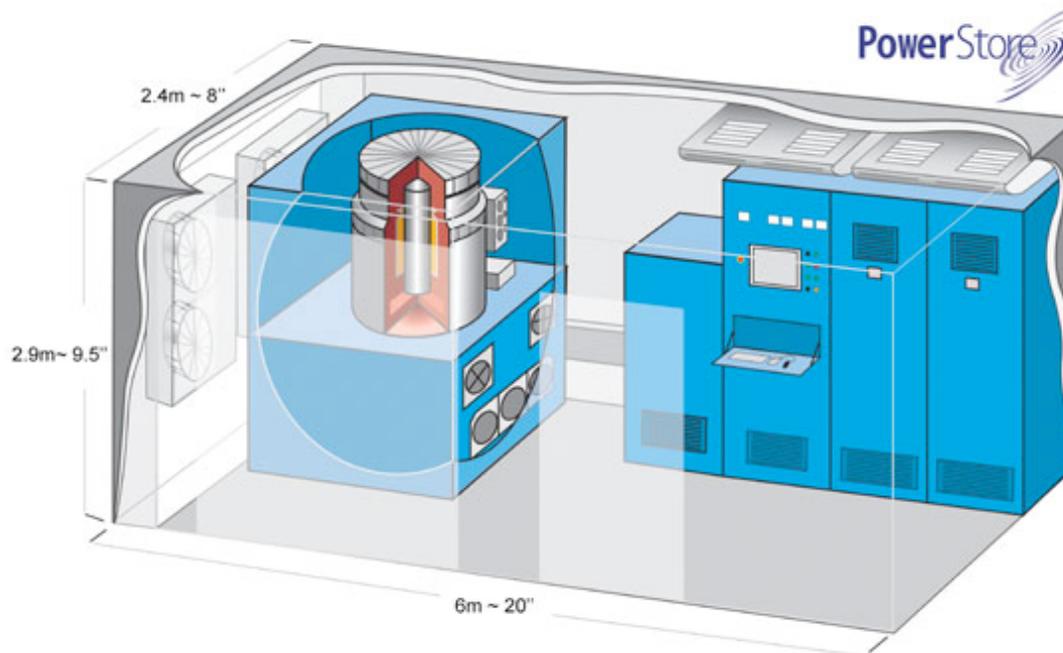
PowerStore Flywheel System

Summary of Wind/Diesel Systems

Station	Wind	Diesel
Denham	990kW	1,600 kW
Mawson	600kW	550kW
Esperance	5,600kW	14,500kW
Hopetoun	600kW	1,300 kW
Cocos Island	100kW	950kW
Bremer Bay	600kW	1,250kW
Rottnest Island	600kW	1,300kW
Coral Bay	825kW	2,560kW

3. Power Quality and Grid (network) Stabilizing Technology

Powercorp's newest and most exciting piece of technology is the PowerStore



What Is PowerStore?

- PowerStore is a kinetic energy storage device
- PowerStore holds a small amount of energy for use at high power rates
 - 18MWs / 5kWh
 - +/-1,000kW per unit available now
- PowerStore is scalable
 - Add more units for more power and/or more energy



What PowerStore is Not

- PowerStore is not a UPS device for maintaining power during an outage
 - Restricted due to contractual arrangements
- PowerStore is not suitable for storing energy for hours
 - Charge maintenance power will cause replacement of all energy in the flywheel



PowerStore Applications

- Peak Lopping
 - Cyclic machines
 - Electric Winders/Hoists
 - Electric Drag lines
- Frequency Regulation
 - Off-Grid Gas Generation
 - Reduce diesel generation
 - Eliminate diesel generation
 - Improve frequency stability
- Electrification of Mines
 - Frequent Starting of Large Machines
 - Electric Trains
 - Electric Trucks for haulage



4. Technical Modeling / Reporting

Control & Dynamic Modeling/Reporting

- Dynamic modeling of all power station components including generators, alternators, draglines and PowerStores
- Define and develop control system optimized for given engine dynamics, dragload requirements and PowerStores
- Develop reactive power/voltage control algorithms
- Analyze the dynamic and real power flow
- Analyze system performance
- Comprehensive report on above
- Detail peak & avg. load on engines & engine dynamic / system voltage and frequency

Power & Energy Modeling/Reporting

- Model power station components
- Model interaction between generators, dragline loads & PowerStores
- Develop optimized design based on above analysis
- Analyze possible options for power system
- Comprehensive report on above
- Optimum number of PowerStores based on engine dynamic performance
- Configuration options including the tradeoff between engine performance and number of PowerStores required

Australian Projects

40+ Other Remote Power Stations supported and serviced

50+ Remote Control Systems

Cocos (Keeling) Island



Yiyilli



Coral Bay



BHP LNO



Denham



Kalbarri



Rottnest Island



Albany



Bremer Bay

Esperance

Hopetoun

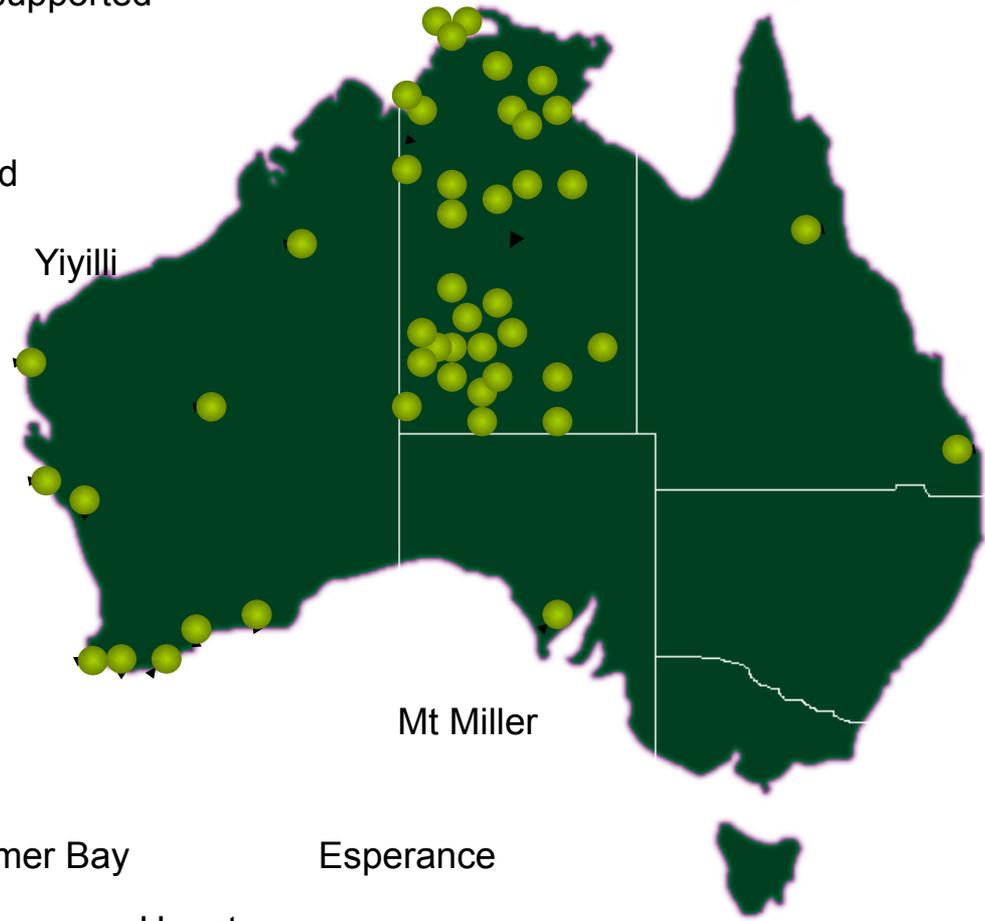
Mt Miller



Windy Hill



Tangalooma



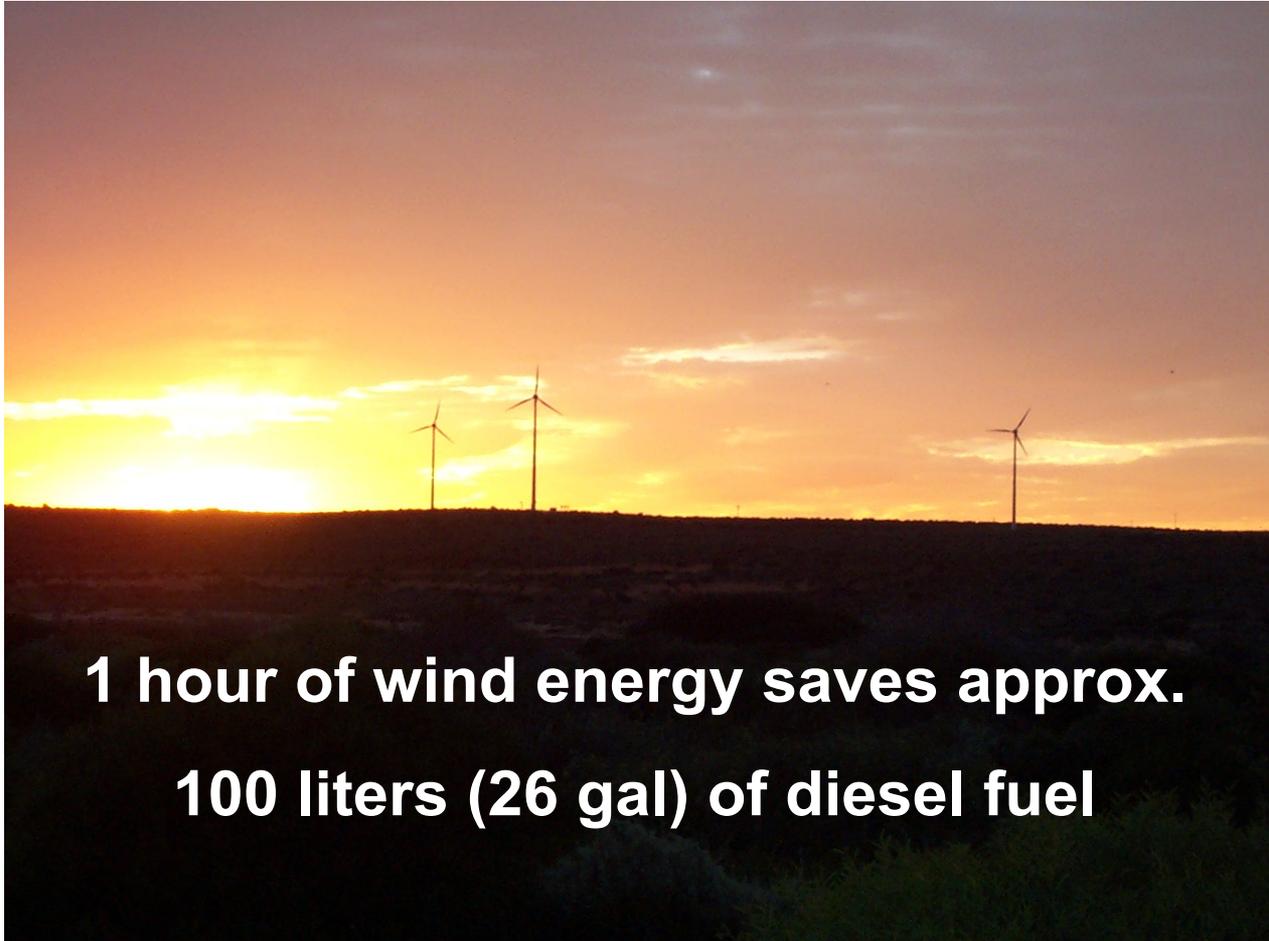
Wind Farms

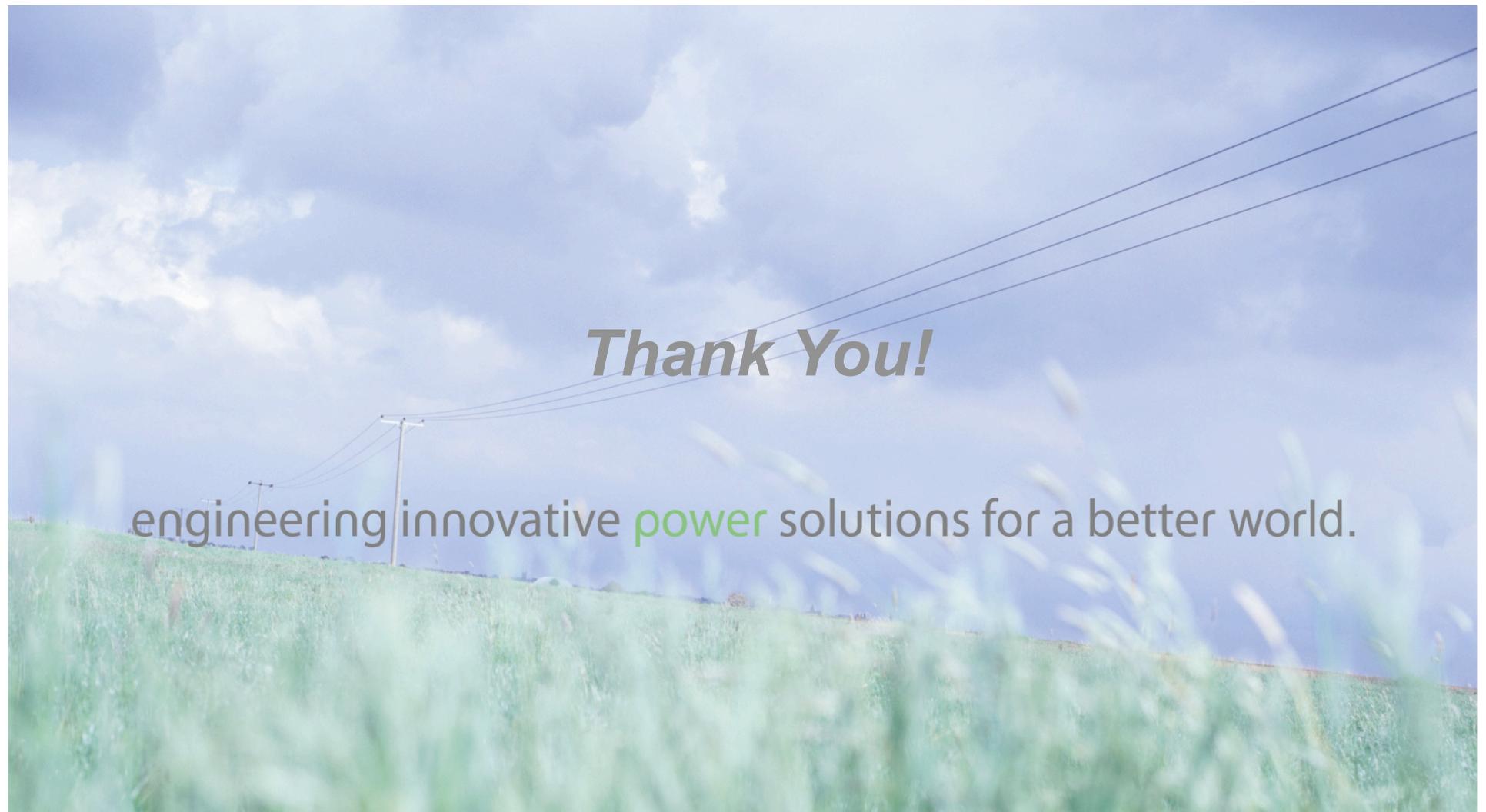


Working toward a complete wind/diesel installation in Alaska

- Preliminary Wind Feasibility Reports
 - Met Tower Installations
 - Met Tower Data Collection

Have also had quite a bit of interest from the mining industry





Thank You!

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