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Introduction to ECT

Investor Briefing

Tuesday 9 October 2012 | Twilight Investor Briefing

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Overview

- Global Energy Overview
- A brief introduction to ECT
- Low Rank Coal challenge & the Coldry solution
- Strategic Partners
- Government Initiatives
- ECT Next Steps

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Global Electrical Energy: Drivers

- Economic Activity = Electricity Demand
- Available generation means; Policy Drivers
- Non-renewable:
  - Available resources (size, development, policy)
  - Resource cost of production & delivery to market
  - Relative fuel prices (competition)
  - Geopolitical, Regulatory, International Trade
    - China will account for ~50% of coal demand growth by 2035
- Renewable:
  - Available types / Costs of deployment
  - CO_2 “costs”; Subsidy mechanisms
  - Base load capabilities

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Energy Sector Stats:

- Energy sector:
  - In 2011 coal was the fastest growing form of primary energy (inc. renewables)
  - Gl…ected to gr…sumed ab…% of global pri…city.
  - Glo…pected to grow…an add…tralia.
    - C…
  - In 20…annum – the s…
  - Glob…reserves are diminishing in quantity, and are less than those of Brown coal (~48%:~52%), while consumption is skewed in the other direction (>80+%: <20%). This drives pricing pressure, as well as energy security concerns.

Key Messages:

- Coal demand is growing
- Black coal is getting progressively more scarce
- The "next" fuel of choice is Brown coal, though these reserves will require beneficiation to improve utilisation & sustainability

References: IES World Energy Outlook 2011; ABARES Energy update 2011; Platts International Coal trader report; World Coal Association

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ECT introduction

- Technology commercialisation company
- Listed on the Australian Stock Exchange (ASX:ESI)
- Focused on:
  - Energy Sector
  - Resource sector
- Core competencies:
  - Brown Coal
  - Process Development

Economic Outcomes, Energy & Resource Security, CO_2 mitigation

- Coldry Process
  - Low rank coal drying / upgrading technology
- Matmor Process
  - Unique, lignite-based iron making process

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Low rank coal challenge

- High moisture
- Low calorific value (CV)
- Low thermal efficiency
- Higher CO_2 emissions
- Low market value due to limited use
  - Not suitable in black coal power stations due to low CV
  - Not economic to transport due to high moisture content
  - Spontaneous combustion risk during transport
- Lignite dried by conventional methods tends to reabsorb moisture, causing self-heating and spontaneous combustion

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Coldry Solution

- Brown coal densification
  - Destroy microstructure via mechanical shear
  - Liberate physically and some chemically trapped moisture
- Low temperature (as low as 35°C – 45°C)
- Waste heat utilisation from host power station reduces operating expenditure
- Low pressure
- Power station synergies & efficiencies
- Ideally suited to mine-mouth power station deployment; Enhancements in planning stage to reduce Electricity demand and Capital expenditure (waste heat harvesting options)

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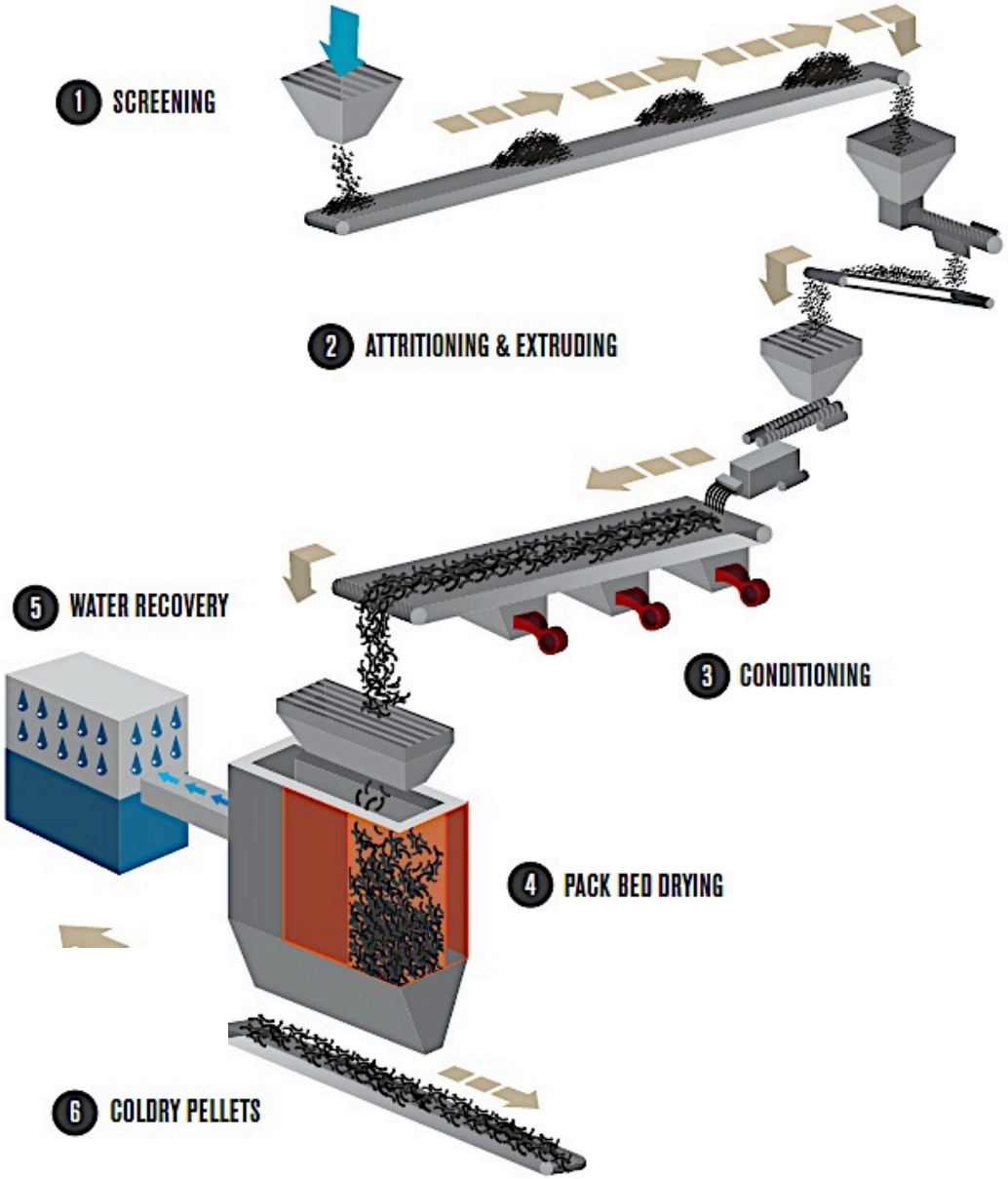
Coldry Process



Coldry is a simple, mechanical process which generates a Black Coal Equivalent energy pellet.

1. Screening and adding a small quantity of water to the raw coal
2. Initiating an exothermic chemical reaction to expel water through attritioning and extrusion of a plasticized mixture
3. Warm air toughening of extruded mixture on a conditioning conveyer prior to pack bed dryer delivery
4. Removal of moisture in a pack bed dryer
5. Recovery of water released in the drying process
6. Stockpiling of high energy Coldry pellets ready for use or transport

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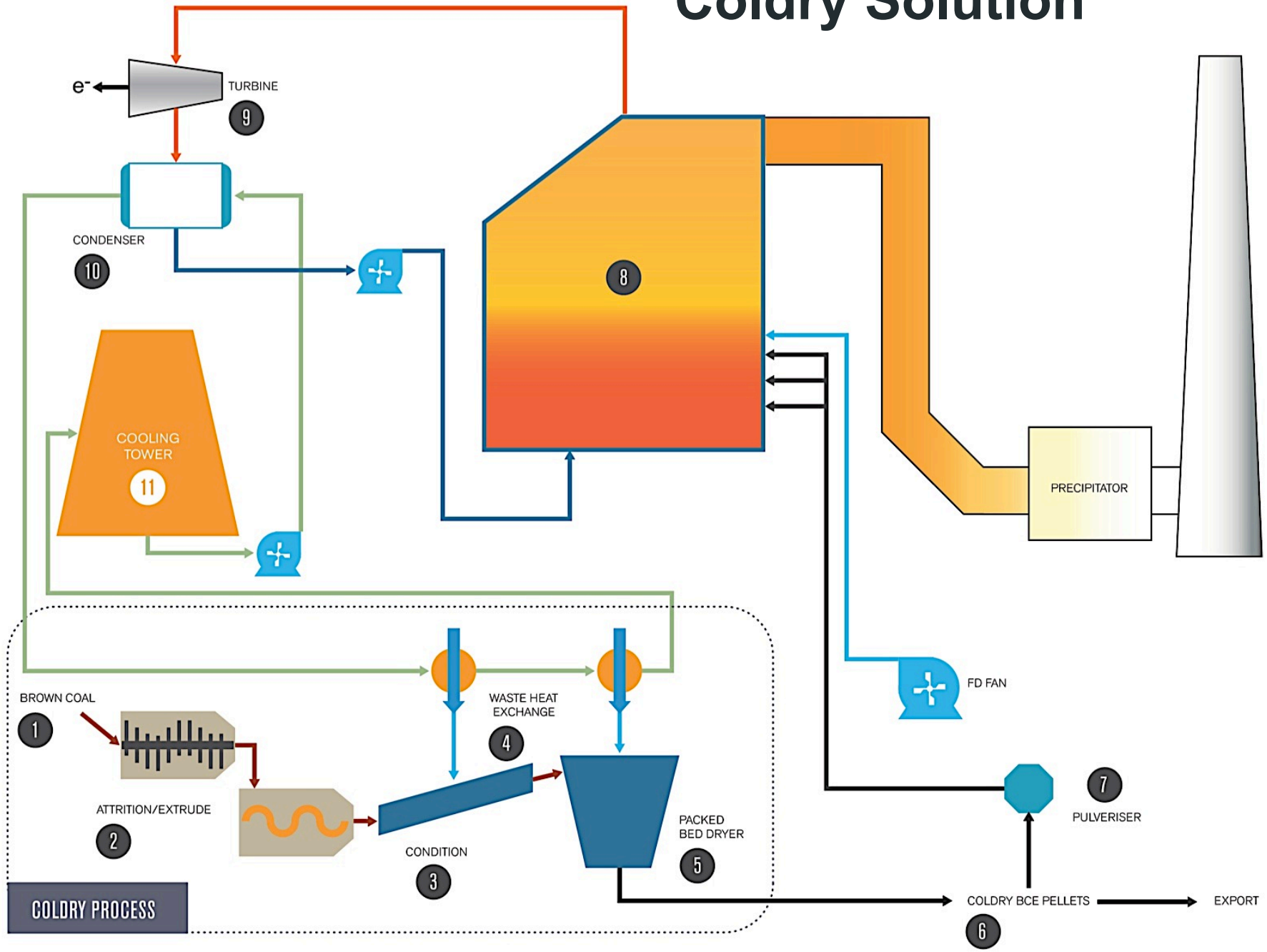
Coldry Solution



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Status of Development - Coldry

- Ownership of Intellectual Property
- Bench, Test, Pilot plant development sequences passed
- Detailed commercial design in progress
- First Commercial project to be built in Victoria (following design & subsequent construction)

Design for Tender: Phase 1 complete, 2 & 3 due to complete this year, tender process to run Q1 2013, construction targeted to commence 2013 H2

Pilot Plant

- 2 tonnes per hour
- Established 2006
- Proof of concept achieved
- Key process parameters established
- Core equipment validated

Commercial Demonstration

- 20 tonnes per hour
- Design & engineering progressing
- Targeted to start construction 2013

Commercial Production & Expansion

- Expand commercial demonstration
- 2 million tonnes per year capacity
- Expansion to 20 million tonnes per year utilising available waste heat

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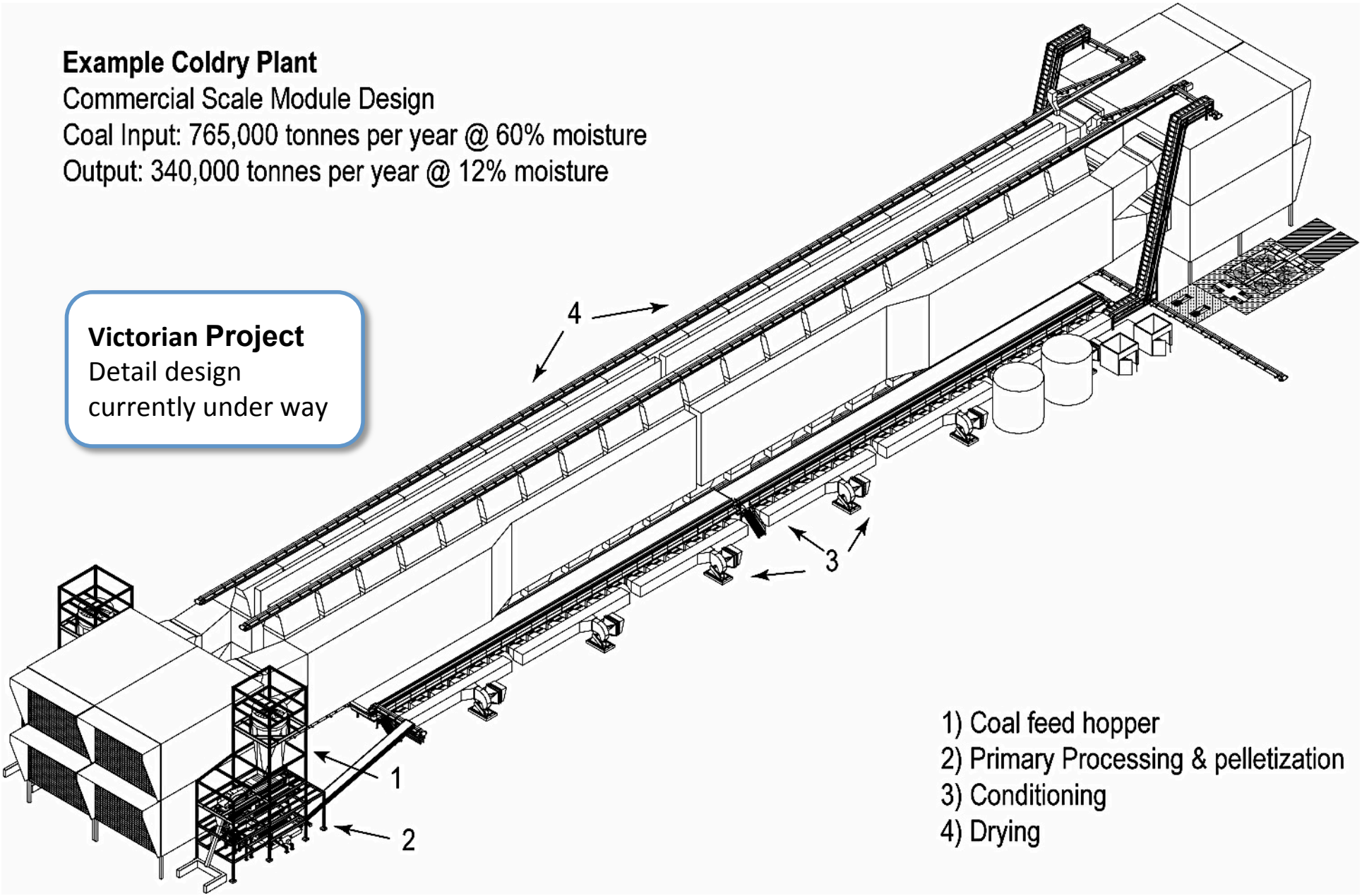
Coldry Modular Design

Example Coldry Plant
Commercial Scale Module Design
Coal Input: 765,000 tonnes per year @ 60% moisture
Output: 340,000 tonnes per year @ 12% moisture

Victorian Project
Detail design currently under way



1) Coal feed hopper
2) Primary Processing & pelletization
3) Conditioning
4) Drying

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Strategic Partners & Suppliers

- Monash Capital – Cornerstone investor
- Arup – Process design & engineering, procurement
- GHD – Planning, power station integration
- McConnell Dowell – Fabrication & Construction
- JC Steele – Critical Equipment / Process optimisation
- Mecrus – EL services

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Target Markets

Coldry:

- Energy security for developing nations via dewatering and making more widely usable domestic high moisture coal resources
  - Example – India, China, Indonesia
- Energy export for countries with large high moisture coal reserves
  - Example – Australia, Indonesia, Poland
- Low cost CO_2 mitigation for nations where this has economic value and where large high moisture coal reserves are utilised in energy generation
  - Example – EU (Germany, Poland, Greece), Australia

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State & Federal Government Initiative

Advanced Lignite Demonstration Program

- $90 million, competitive, merit-based grant program
- Targeting pre-commercial demonstration of fit-for-purpose “coal upgrading” processes
- Aims:
  - To develop and deploy emerging technology to reduce greenhouse gas emissions intensity of lignite
  - To improve the economically recoverable return from lignite
  - To provide employment opportunities in the Latrobe Valley and broader region

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Looking to the Future

- Coldry to advance to demonstration
  - Completion of ‘Design For Tender’ for Loy Yang-based Demonstration plant
  - Commissioning targeted for 2014
  - Commercial rollout to 2mtpa following demonstration
  - O/S deployment in target locations
- Matmor
  - Pilot plant development targeted for H2 2014
  - Commercial and academic partnerships currently being explored

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Thank you

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