Hatfield 900MW IGCC Power Station with CCS

By Grant Budge, Director
Powerfuel Power Ltd

Coal Research Forum
Leeds

April 2009
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Powerfuel’s Philosophy and Belief

SUSTAINABLE CLUSTER DEVELOPMENT

- Access 100 million tonnes of high quality coal (Other coal reserves within the region)
- Deliver 900MW IGCC Power Station with CCS
- 60% of coal and gas power stations situated on the estuary of the Trent and Aire are in Humberside
- Ideally located in the middle of the depleted inshore gas fields (short term sequestration and buffer storage for EOR)
- Ideal location for IGCC on shores of Humber for raw material feed (coal imports and indigenous production)
- In total 80 million tonnes of CO$_2$ could be captured within 30km radius of the Humber.
Aerial Picture of Site

CONTRACTORS COMPOUND

POWER STATION SITE

HATFIELD MINE

NORTH EAST
Hatfield IGCC Development Update

- Section 36
- Section 14
- Section 37
- Abstraction Licence
- Gas Pipeline
- Water Pipeline
- Environmental Permit

Planning & Consents

- Phase 1 - Engineering
  - FEED
  - SRU
  - AGR
  - Gasifiers

Design & Engineering

- Electricity/Gas Connection
  - EPC Contract
  - EEP Contract
  - Of-Site Utilities
  - Trading Agreement
  - O&M Agreement
  - LTSA
  - Water Supply

Contracts
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<tr>
<th>Agreement</th>
<th>Preferred Contractor Selected/Applied For</th>
<th>Contract in Final Form</th>
<th>Contract Signed and Subject to Conditions Precedent</th>
<th>Effective Date</th>
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- Yes: Completed
- Near: 0 – 6 Months
- Far: 6 – 12 Months

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Basis of Design

Coal Milling and Drying

Gasifier (Stream 1)

Gasifier (Stream 2)

Acid Gas Removal

CO2 Shift and Compression

Sulphur Recovery

Gas Turbine (Stream 1)

HRSG (Stream 1)

Steam Turbine (Common)

Gas Turbine (Stream 2)

HRSG (Stream 2)

Air Separation Unit

Water Treatment

Water Cooling

Natural Gas Supply

Black Start Turbine

PHASE 2 BUILD

IGCC (900MW Gross)

PHASE 1 BUILD

CCGT (800MW Gross)

DIRECTION OF PROCESS FLOW

POWER

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Flexibility, Availability and Opportunity

![Graph showing flexibility, availability, and opportunity with percentage splits and NOx levels.](image)
Hatfield Project
Sustainable Operational Phase Diagram

[Diagram showing the relationship between carbon price (€/tonne CO₂) and gas price (£/GJ) with different operational phases indicated by color and labels: GAS, COAL, 3 p/kWh, 4 p/kWh, GAS + CCS, COAL + CCS.]
Summary
Why Hatfield Works?

• Based on PROVEN TECHNOLOGY

• Opportunity to Deliver Sustainability of COAL RESERVES

• On CO₂ CLUSTER REGIONAL NETWORK Practical Route

• Inherent TRANSPORT SECURITY for Raw Material supply

• Gas Secondary Fuel Base Through LOCAL CONNECTIVITY TO NTS

• Security of GRID CONNECTION
QUESTIONS