$160 million invested over four years into coal beneficiation technology Coal Plus

The board of Jatenergy Limited is pleased to announce that two new coal beneficiating plants employing the proprietary Coal Plus technology are currently nearing completion in China.

The two new plants together with the three existing Coal Plus plants represent a total investment into in Coal Plus technology over four years of $160 million (about RMB 1 billion), and bring the combined input capacity to over 6.7 Mtpa.

The three existing plants, which are all located in the county of Fugu in the Shaanxi province, have input capacities of 1, 2 and 1.5 Mtpa. An additional pilot plant is also being operated in Fugu for research and process development. There are currently two Coal Plus plants under construction outside of Fugu. One is near the city of Pingdingshan in Henan province. The first stage of this plant is scheduled to be completed in April 2013 and will have an input capacity of 600 ktpa. The second plant under construction is located in Xinjiang province. It is scheduled for completion in September 2013, and will have an initial input capacity of 1.6 Mtpa.
Construction of these two new plants demonstrates the technical and commercial viability of the Coal Plus coal beneficiating technology, as well as its general market acceptance. Jatenergy holds a licence for application of the Coal Plus technology in Indonesia, Southeast Asia and Oceania.

**Coal Plus plants currently operating or under construction**

<table>
<thead>
<tr>
<th>No.</th>
<th>Plant location</th>
<th>Input capacity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fugu, Shaanxi</td>
<td>1 Mtpa</td>
<td>Operating plant</td>
</tr>
<tr>
<td>2</td>
<td>Fugu, Shaanxi</td>
<td>2 Mtpa</td>
<td>Operating plant</td>
</tr>
<tr>
<td>3</td>
<td>Fugu, Shaanxi</td>
<td>1.5 Mtpa</td>
<td>Operating plant</td>
</tr>
<tr>
<td>4</td>
<td>Fugu, Shaanxi</td>
<td>40 ktpa</td>
<td>Pilot plant with four-hole carbonisation chamber</td>
</tr>
<tr>
<td>5</td>
<td>Pingdinshan, Henan</td>
<td>600 ktpa</td>
<td>First stage scheduled for completion in April 2013</td>
</tr>
<tr>
<td>6</td>
<td>Xinjiang</td>
<td>1.6 Mtpa</td>
<td>Scheduled for completion in September 2013</td>
</tr>
</tbody>
</table>

Operating Coal Plus plant in Fugu, Shaanxi

Operating Coal Plus plant in Fugu, Shaanxi

Operating Coal Plus plant in Fugu, Shaanxi

Coal Plus plant being constructed in Pingdinshan, Henan
Jatenergy meets with China Development Bank

Jatenergy has held meetings with a delegation from the Henan Branch of the China Development Bank on their recent visit to Australia. The Bank has expressed interest in future Coal Plus projects and a willingness to assess such projects with a view to their potential funding.

Letter of intent signed with Coal Energy Australia Limited

The board of Jatenergy is also pleased to announce that it has signed a non-binding letter of intent with Coal Energy Australia Limited (CEA). CEA is a newly formed company established to explore opportunities for developing, owning and operating coal beneficiation facilities in Victoria’s Latrobe Valley. Latrobe Valley coals typically have higher moisture, lower ash and lower sulphur content than those processed to date with Coal Plus in China.

Jatenergy and CEA have agreed to cooperate for their potential mutual benefit in the areas of:
- marketing, promotion, development and operation of Coal Plus technology in the Latrobe Valley (in the case of CEA) and internationally (in the case of Jatenergy)
- sharing of technical and capital information on Coal Plus technology to better enhance its saleability and acceptance
- potentially establishing a basis for making decisions on executing and investing in projects.

About Jatenergy

Jatenergy Limited is a Sydney-based diversified energy company operating in both Australia and Asia. Jatenergy’s strategic focus is on producing cash returns from its coal and jatropha assets as well as implementing the proprietary Coal Plus technology for upgrading low grade coal into high value energy products.
Coal Plus FAQs

Process inputs and outputs

What type of coals are been upgraded?
The existing Coal Plus plants are mainly used for processing coals from the local area, Shenmu and Ordos. These coals are mostly long-flame coal. Coal Plus can also be used for processing non-stick or weakly caking gas coal and lignite, as well as other low rank coals.

What are the specifications of the coal being used?
In Fugu area, the typical coal specifications are as follows:
• Volatile matter: 30–50%
• Ash: 6–20%
• Moisture content: 5–30%
• Energy content: 3500–6500 kcal/kg.

How much water, steam and electricity is required?
To process one tonne of coal requires approximately 0.5 t of water, 0.10 t of steam and 25 kWh of electricity.

Are there any limiting feedstock requirements?
The coal feedstock should have a volatile content of at least 28%, a particle size of less than ~80 mm and be non-stick or weak viscous coal. There are no other special requirements.

What is the minimum size fraction treatable and can fines be processed?
The process requires a particle size of less than ~80 mm of mixed coal. The proportion of pulverised coal used with a particle size less than 3 mm is less than 25%.

What are the yield and specifications of the products produced?
The main products from Coal Plus are low volatile solid fuel (LVSF—a semi-coking or coking coal substitute), pyrolysis oil and gas. The residual gas yield depends on the moisture content of the coal. If the moisture content is less than 10%, the process consumes about 150–250 Nm³ per tonne of dry coal, giving a residual gas yield of about 100–250 Nm³/t. The specifications of those products are:

<table>
<thead>
<tr>
<th>LVSF</th>
<th>Pyrolysis oil</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield:</td>
<td>60–70%</td>
<td>Yield:</td>
</tr>
<tr>
<td>Volatile matter:</td>
<td>~1–10%</td>
<td>Proportion:</td>
</tr>
<tr>
<td>Ash:</td>
<td>~6–20%</td>
<td>Water:</td>
</tr>
<tr>
<td>Moisture content:</td>
<td>&lt;15%</td>
<td>Energy content:</td>
</tr>
<tr>
<td>Energy content:</td>
<td>~24–28 MJ/kg</td>
<td></td>
</tr>
</tbody>
</table>
What are the applications of LVSF?

The low volatile solid fuel LVSF can be used as a substitute for PCI (pulverised coal injection) in steel making, and for coal gasification. It can also be used as the carbonaceous reducing agent of calcium carbide, ferrosilicon and the industrial production of silicon, or as a raw material of the activated carbon and carbon molecular sieves.

What are the characteristics of the LVSF from the Coal Plus process?

The characteristics of the LVSF produced by the Coal Plus process depend on the characteristics of the coal feedstock and the process. The volatile content can vary between 1 and 10% but is typically 5–8%. The water content is 5–15% (and adjustable via varying of process parameters). The ash content depends on the ash content of the feedstock. The energy content is typically in the range 5500–7500 kcal/kg.

What is the size fraction of the LVSF?

The block degree distribution depends on the coal feedstock and its strength.

Is the LVSF friable and are there any issues with dust?

The strength and friability of the LVSF depends on the strength of the coal feedstock. Generation of dust during transport can be controlled by adjusting the moisture content of the LVSF.

What is the composition of the gas produced from the process?

This depends on the composition of the coal used for the process. The following data is an example:

<table>
<thead>
<tr>
<th>Component</th>
<th>H₂ (%</th>
<th>CH₄ (%)</th>
<th>CO (%)</th>
<th>CₓHᵧ (%)</th>
<th>CO₂ (%)</th>
<th>O₂ (%)</th>
<th>N₂ (%)</th>
<th>Q (MJ/Nm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composition</td>
<td>47</td>
<td>21</td>
<td>12</td>
<td>2</td>
<td>11</td>
<td>2</td>
<td>5</td>
<td>15.6</td>
</tr>
</tbody>
</table>

Process information

How is water removed from the coal?

The coal feedstock is gradually heated in a furnace, which vaporises the water.

How is the process powered?

If the volatile content of the coal is sufficiently high, the Coal Plus process is generally self-sustaining, with a proportion of the gas produced by coal pyrolysis used to heat the furnace.

What waste products are generated?

The process generates waste water, which is treated and discharged or used on site. The only CO₂ emissions from the process are from the burning of gas to heat the furnace. Fixed carbon in the coal feedstock is retained in the form of LVSF, while carbon in the volatile content is converted into pyrolysis oil and gas.
Why are power, water and steam requirements lower for larger scale plants per unit of throughput?
Economies of scale mean larger plants are more efficient in their use of power, water and steam.

**Financial information**

**How big is a Coal Plus plant at each phase of construction?**
This depends on the specific circumstances of each project.

**Do capital costs scale linearly with plant size?**
No. Economies of scale mean that larger plants are proportionally cheaper, while smaller plants are more expensive per unit of output.

**General information**

**How is Coal Gas planned to be used?**
Wider uses of residual gas include as a kiln fuel for direct combustion, as well as chemical synthesis of methanol, LNG etc.

**How is the technology licensed?**
Coal Plus is a patented technology. Users can pay to license the technology.

**Can Coal Plus be provided under a turnkey contract for plant construction and/or operation?**
Yes.

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**Directors**
- **Tony Crimmins**
  Executive Chairman
- **Richard Pritchard**
  Non-Executive Director
- **Mr Xipeng Li**
  Non-Executive Director
- **Mr Wilton Yao**
  Alternate Director

**Jatenergy Limited**
ABN 31 122 826 242

**ASX code**
JAT

**Ordinary fully paid shares**
98,565,568

**Listed options**
31,898,547