Opposed Multi-Burner Gasification Technology

-------Seven New Projects in China

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OMB CWS Gasification Process
Demonstration project update
Yankuang Cathy Coal Chemical Co.

Update

- Company: Yankuang Cathy Coal Chemical Co.
- Location: Tengzhou City, Shandong Province, China
- 2+1 gasifiers
- Single Capacity: 1150 TPD
- Pressure: 4.0 MPa
- Startup: Oct. 2005
Availability and Reliability

Until Sep. 2007, 2 gasifiers on operation, no spare gasifier

Reliability of 2006:
97.3%
### Typical feedstock analysis data (wt%)

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>Type 1</th>
<th>Type 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
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<td>71.23</td>
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<tr>
<td>H</td>
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<td>6.08</td>
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<td>1.0</td>
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<tr>
<td>S</td>
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<td>O</td>
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<td>14.76</td>
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<tr>
<td>Ash</td>
<td>7.32</td>
<td>6.65</td>
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</table>

### Typical syngas analysis (v%, dry base)

<table>
<thead>
<tr>
<th>Gas</th>
<th>Type 1</th>
<th>Type 2</th>
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<tbody>
<tr>
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<td>H2S</td>
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Yankuang Cathy Coal Chemical Co.

Update

The Third Gasifier Startup on Sep. 3, 2007

Based on more than one year experience of former gasifiers, the third one has been built. Then, 2 on operation, 1 spare.

Improvement from former 2 gasifiers:

• Burners position is optimized

The third gasifier represents typical structure of OMB gasifier in future projects.
OMB gasification involved in Seven new projects in China
1. Fenghuang Fertilizer Plant

- Company: Tengzhou Fenghuang Fertilizer Plant
- Location: Tengzhou city, Shandong province
- Final Product:
  - 300KT/a MeOH
- Planned startup date: Dec. 2008

- Gasifiers number: 2
- Single gasifier capacity: 1500 TPD
- Gasification temperature: 1350℃
- Gasification Pressure: 6.5MPa
2. Yankuang Lunan Fertilizer Plant Expansion Project

- Company: Yankuang Lunan Fertilizer Plant
- Location: Tengzhou city, Shandong province
- Final Product:
  - 240KT/a NH3
- Planned startup date: Jun. 2009

- Gasifiers number: 1
- Single gasifier capacity: 1150 TPD
- Gasification temperature: 1300 ℃
- Gasification Pressure: 4.0MPa

- Company: Jiangsu SOPO Group
- Location: Zhengjiang city, Jiangsu province
- Final Product:
  - 600KT/a MeOH
- Planned startup date: Mar. 2009

- Gasifiers number: 3
- Single gasifier capacity: 1500 TPD
- Gasification temperature: 1330℃
- Gasification Pressure: 6.5MPa
4. Jiangsu Linggu Chemical Co. Ltd.

- Company: Jiangsu Linggu Chemical CO. Ltd.
- Location: Yixing city, Jiangsu province
- Final Product:
  - 450KT/a NH3
- Planned startup date: Mar. 2009

- Gasifiers number: 2
- Single gasifier capacity: 1800 TPD
- Gasification temperature: 1360℃
- Gasification Pressure: 4.0MPa
5. Ningbo Wanhua polyurethane Co. Ltd.

- Company: Ningbo Wanhua Polyurethane CO. Ltd.
- Location: Ningbo city, Zhejiang province
- Final Product:
  - 240KT/a MeOH, 80KT/ NH3,
  - 17KNm3/h CO, 30KNm3/h H2
- Planned startup date: Feb. 2010

- Gasifiers number: 3
- Single gasifier capacity: 1000 TPD
- Gasification temperature: 1300℃
- Gasification Pressure: 6.5MPa
6. Huadian Banshan Power Plant (IGCC)

- Company: Huadian Banshan Power Plant
- Location: Hangzhou city, Zhejiang province
- Final Product:
  - 230 MW Power
- Planned startup date: 2010

- Gasifiers number: 1
- Single gasifier capacity: ~2000 TPD
- Gasification temperature: 1310°C
- Gasification Pressure: 4.0MPa
7. Shenghua Ningxia Coal Group

- Company: Shenghua Ningxia Coal Group
- Location: Yinchuan city, Ningxia province
- Final Product:
  - 750kT/a MeOH
- Planned startup date: 2009

- Gasifiers number: 3
- Single gasifier capacity: 2000 TPD
- Gasification temperature: 1350°C
- Gasification Pressure: 4.0MPa
### Coal and Estimated Syngas Composition

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<thead>
<tr>
<th>element</th>
<th>No.1</th>
<th>No.2</th>
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Thanks

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